

# Environmental Noise & Vibration Assessment

## Bayside Church Phase 2 – Bayside Fields

Placer County, California

BAC Job # 2021-168

Prepared For:

Bayside Church

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## Introduction

Bayside Church is located at 8191 Sierra College Boulevard in Roseville (Placer County), California. The church and associated facilities were previously approved and developed as Phase 1 of the Bayside Church development. Phase 2 of the development (Bayside Fields, project), which was also previously approved, consists of the creation of recreation uses consisting of soccer fields, a children's play area, and other associated amenities. Bayside Church now proposes the construction of the previously approved recreation improvements. The project area and site plan are shown on Figures 1 and 2, respectively.

The purposes of this assessment are to quantify the existing noise and vibration environments, identify potential noise and vibration impacts resulting from the project, identify appropriate mitigation measures, and provide a quantitative and qualitative analysis of impacts associated with the project. Specifically, impacts are identified if project-related activities would cause a substantial increase in ambient noise or vibration levels at existing sensitive land uses in the project vicinity, or if future traffic or project-generated noise or vibration levels would exceed applicable federal, state, or local standards at existing or proposed (project) uses.

## Noise and Vibration Fundamentals

### Noise

Noise is often described as unwanted sound. Sound is defined as any pressure variation in air that the human ear can detect. If the pressure variations occur frequently enough (at least 20 times per second), they can be heard and are designated as sound. The number of pressure variations per second is called the frequency of sound and is expressed as cycles per second, or Hertz (Hz). Definitions of acoustical terminology are provided in Appendix A.

Measuring sound directly in terms of pressure would require a very large and awkward range of numbers. To avoid this, the decibel scale was devised. The decibel scale uses the hearing threshold (20 micropascals of pressure) as a point of reference, defined as 0 dB. Other sound pressures are then compared to the reference pressure, and the logarithm is taken to keep the numbers in a practical range. The decibel scale allows a million-fold increase in pressure to be expressed as 120 dB. Another useful aspect of the decibel scale is that changes in decibel levels correspond closely to human perception of relative loudness. Noise levels associated with common noise sources are provided in Figure 3.

The perceived loudness of sounds is dependent upon many factors, including sound pressure level and frequency content. However, within the usual range of environmental noise levels, perception of loudness is relatively predictable and can be approximated by filtering the frequency response of a sound level meter by means of the standardized A-weighting network. There is a strong correlation between A-weighted sound levels (expressed as dBA) and community response to noise. For this reason, the A-weighted sound level has become the standard tool of environmental noise assessment. All noise levels reported in this section are in terms of A-weighted levels.

Community noise is commonly described in terms of the ambient noise level, which is defined as the all-encompassing noise level associated with a given noise environment. A common statistical tool to measure the ambient noise level is the average, or equivalent, sound level ( $L_{eq}$ ). The  $L_{eq}$  is the foundation of the day-night average noise descriptor, DNL (or  $L_{dn}$ ), and shows very good correlation with community response to noise. DNL is based on the average noise level over a 24-hour day, with a +10-decibel weighting applied to noise occurring during nighttime (10:00 PM to 7:00 AM) hours. The nighttime penalty is based on the assumption that people react to nighttime noise exposures as though they were twice as loud as daytime exposures. Because DNL represents a 24-hour average, it tends to disguise short-term variations in the noise environment.

## **Vibration**

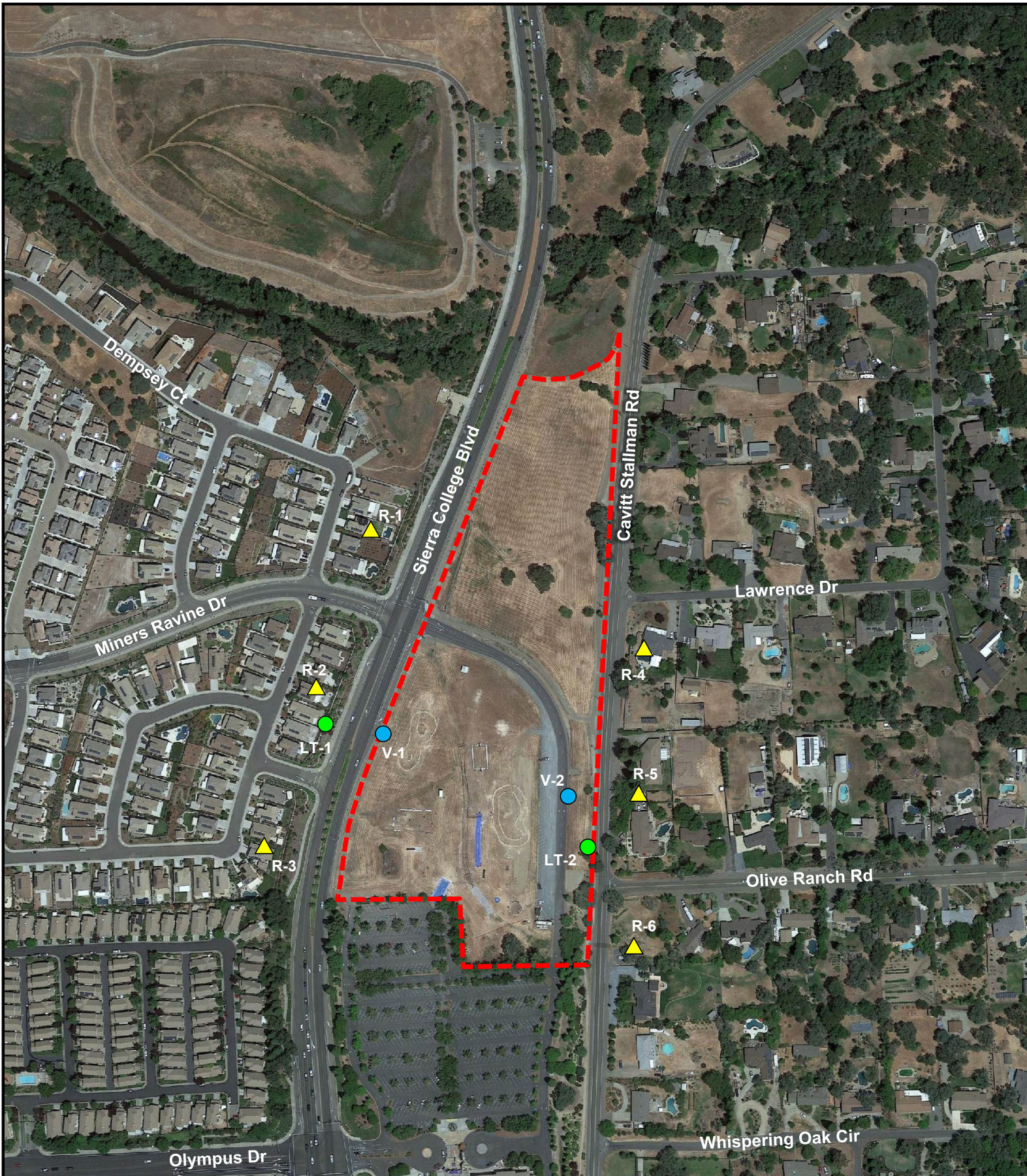
Vibration is like noise in that it involves a source, a transmission path, and a receiver. While vibration is related to noise, it differs in that noise is generally considered to be pressure waves transmitted through air, while vibration is usually associated with transmission through the ground or structures. As with noise, vibration consists of an amplitude and frequency. A person's response to vibration will depend on their individual sensitivity as well as the amplitude and frequency of the source.

Vibration can be described in terms of acceleration, velocity, or displacement. A common practice is to monitor vibration in terms of velocity in inches per second peak particle velocity (IPS, PPV) or root-mean-square (VdB, RMS). Standards pertaining to perception as well as damage to structures have been developed for vibration in terms of peak particle velocity as well as RMS velocities.

As vibrations travel outward from the source, they excite the particles of rock and soil through which they pass and cause them to oscillate. Differences in subsurface geologic conditions and distance from the source of vibration will result in different vibration levels characterized by different frequencies and intensities. In all cases, vibration amplitudes will decrease with increasing distance.

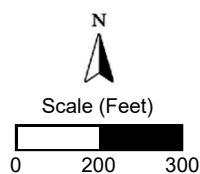
Human response to vibration is difficult to quantify. Vibration can be felt or heard well below the levels that produce any damage to structures. The duration of the event has an effect on human response, as does frequency. Generally, as the duration and vibration frequency increase, the potential for adverse human response increases.

According to the Transportation and Construction-Induced Vibration Guidance Manual (Caltrans, April 2020), operation of construction equipment and construction techniques generate ground vibration. Traffic traveling on roadways can also be a source of such vibration. At high enough amplitudes, ground vibration has the potential to damage structures and/or cause cosmetic damage. Ground vibration can also be a source of annoyance to individuals who live or work close to vibration-generating activities. However, traffic, rarely generates vibration amplitudes high enough to cause structural or cosmetic damage.



### Legend

- Project Boundary (Approximate)
- Long-Term Ambient Noise Survey Locations
- Short-Term Ambient Vibration Survey Locations
- ▲ Nearest Residential Receivers (Representative)



Bayside Fields  
Placer County, California

Project Area

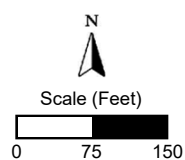
Figure 1





### Legend

--- Project Boundary



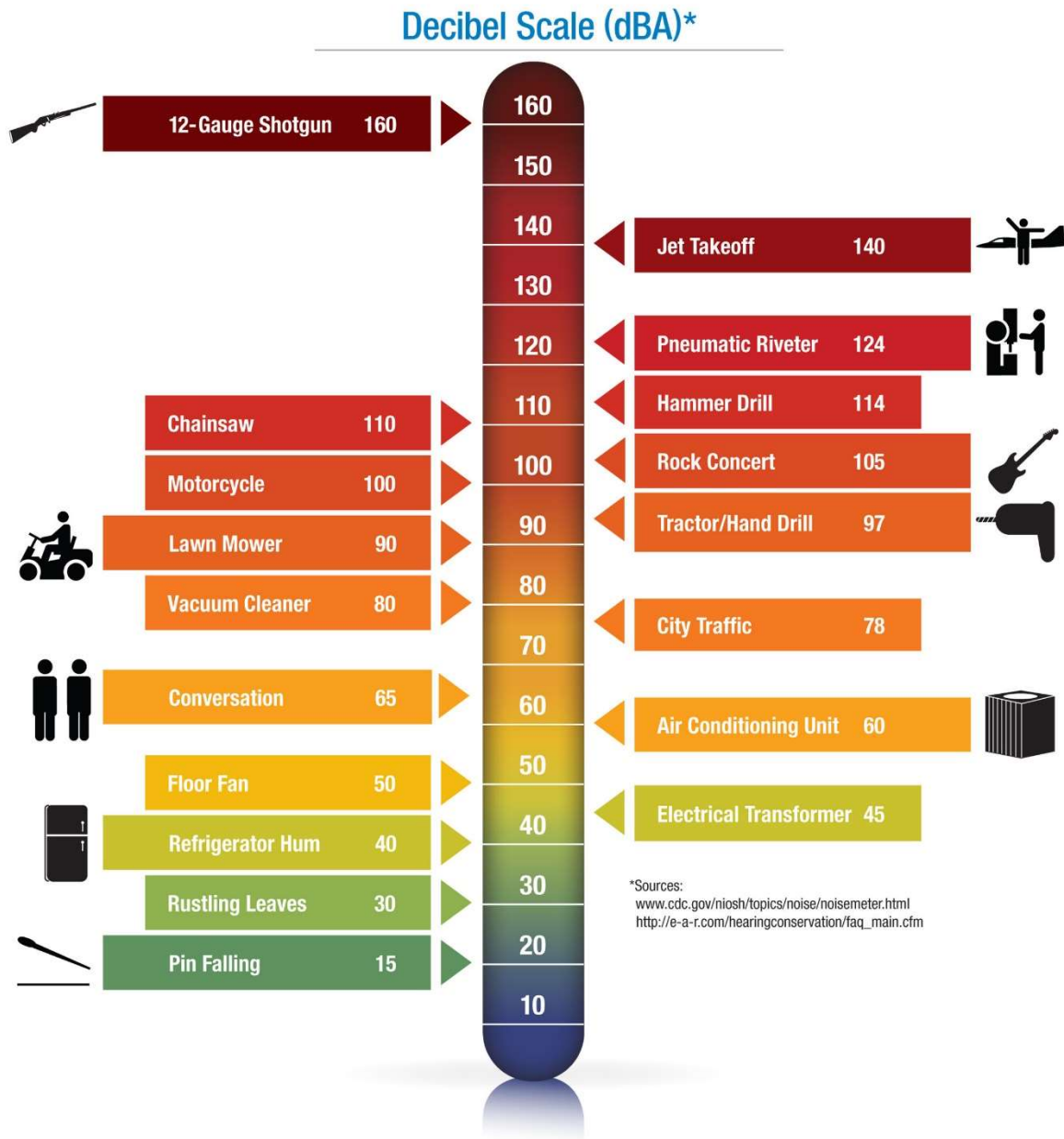
Bayside Fields  
Placer County, California

Site Plan

Figure 2



**Figure 3**  
**Noise Levels Associated with Common Noise Sources**



## **Environmental Setting – Existing Ambient Noise and Vibration Environment**

### **Land Uses in the Project Vicinity**

Noise-sensitive land uses are generally defined as locations where people reside or where the presence of unwanted sound could adversely affect the primary intended use of the land. Places where people live, sleep, recreate, worship, and study are generally considered to be sensitive to noise because intrusive noise can be disruptive to these activities. The nearest off-site noise-sensitive land uses which would potentially be affected by the project consist of residential uses to the east and west of the project area. The project area and nearby residential uses are shown on Figure 1.

### **Existing Traffic Noise Levels along Project Area Roadway Network**

The FHWA Traffic Noise Model (FHWA-RD-77-108) was used to develop existing noise contours expressed in terms of DNL for major roadways within the project study area. The FHWA Model predicts hourly  $L_{eq}$  values for free-flowing traffic conditions. Estimates of the hourly distribution of traffic for a typical 24-hour period were used to develop DNL values from  $L_{eq}$  values.

Traffic data in the form of Weekday PM, Saturday Midday and Sunday Midday peak hour movements for existing conditions were obtained from the project draft traffic impact study prepared by KD Anderson & Associates, Inc. According to the traffic study, the Weekday PM peak hour (4:00 p.m. to 6:00 p.m.) would represent the highest volume period for weekday traffic, with soccer players arriving for practice. The Saturday Midday peak hour was included in the traffic study due to the high background Saturday traffic volumes occurring within the area of Bayside Church during midday, as well as for the typical mid-morning to mid-afternoon usage commonly associated with soccer fields. Finally, because Bayside Church hosts multiple services on Sunday, the midday condition that captures concurrent travel (highest volumes) was utilized. Daily traffic volumes were conservatively estimated by applying a factor of 10 to peak hour conditions. Using these data and the FHWA Model, traffic noise levels were calculated. The traffic noise level at 100 feet from the roadway centerline and distances from the centerlines of selected roadways to the 60 dB DNL, 65 dB DNL, and 70 dB DNL contours are summarized in Tables 1-3.

In many cases, the actual distances to noise level contours may vary from the distances predicted by the FHWA Model. Factors such as roadway curvature, roadway grade, shielding from local topography or structures, elevated roadways, or elevated receivers may affect actual sound propagation. It is also recognized that existing sensitive land uses within the project vicinity are located varying distances from the centerlines of the local roadway network. The 100-foot reference distance is utilized in this assessment to provide a reference position at which changes in existing and future traffic noise levels resulting from the project can be evaluated. Appendix B contains the FHWA Model inputs for existing conditions.

**Table 1**  
**Existing Traffic Noise Modeling Results – Weekday PM Peak Hour**

Seg.	Intersection	Direction	DNL 100 ft from Roadway	Distance to Contour (ft)		
				70 dB DNL	65 dB DNL	60 dB DNL
1	(1) Sierra College Blvd / Miners Ravine Dr	North	68	72	154	332
2		South	68	72	155	334
3		East	46	3	6	13
4		West	53	7	15	33
5	(2) Sierra College Blvd / Olympus Dr	North	68	72	156	335
6		South	67	67	143	309
7		East	51	6	13	27
8		West	60	23	49	106
9	(3) Sierra College Blvd / Cavitt Stallman Rd	North	67	67	145	313
10		South	67	63	135	290
11		East	55	10	21	45
12		West	--	--	--	--
13	(4) Sierra College Blvd / Douglas Blvd	North	67	62	133	286
14		South	67	66	143	308
15		East	69	86	185	398
16		West	69	87	187	402
17	(5) Sierra College Blvd / Renaissance Creek	North	67	67	145	313
18		South	67	67	145	313
19		East	52	6	13	28
20		West	55	10	22	47
21	(6) Sierra College Blvd / Eureka Rd	North	67	67	144	310
22		South	67	59	127	273
23		East	60	23	49	106
24		West	62	27	59	126
25	(7) Cavitt Stallman Rd / Olive Ranch Rd	North	55	11	23	49
26		South	59	18	38	82
27		East	56	12	25	55
28		West	--	--	--	--
29	(8) Cavitt Stallman Rd / Bowman Pl	North	60	21	46	99
30		South	59	17	37	81
31		East	36	1	1	3
32		West	56	12	27	58
33	(9) E Roseville Pkwy / Olympus Dr	North	68	76	163	351
34		South	68	71	154	332
35		East	61	25	55	118
36		West	55	10	22	47
37	(10) E Roseville Pkwy / Douglas Blvd	North	68	71	154	331
38		South	66	51	109	236
39		East	69	92	199	428
40		West	68	78	168	361
41	(11) Cavitt Stallman Rd / Douglas Blvd	North	55	9	20	44
42		South	54	8	18	38
43		East	69	83	180	387
44		West	69	83	180	387
45	(12) Woodgrove Way / Douglas Blvd	North	47	3	6	13

**Table 1**  
**Existing Traffic Noise Modeling Results – Weekday PM Peak Hour**

Seg.	Intersection	Direction	DNL 100 ft from Roadway	Distance to Contour (ft)		
				70 dB DNL	65 dB DNL	60 dB DNL
46		South	48	4	8	17
47		East	69	82	177	382
48		West	69	83	180	387
49	(13) Seeno Dr / Douglas Blvd	North	48	3	7	16
50		South	--	--	--	--
51		East	69	82	177	380
52		West	69	82	177	382
53	(14) Barton Rd / Douglas Blvd	North	59	20	42	92
54		South	61	27	58	125
55		East	69	80	173	373
56		West	68	79	171	368
Blank cell = no traffic data was provided						
Source: FHWA-RD-77-108 with inputs from project traffic impact study. Appendix B contains FHWA model inputs.						

**Table 2**  
**Existing Traffic Noise Modeling Results – Saturday Midday Peak Hour**

Seg.	Intersection	Direction	DNL 100 ft from Roadway	Distance to Contour (ft)		
				70 dB DNL	65 dB DNL	60 dB DNL
1	(1) Sierra College Blvd / Miners Ravine Dr	North	66	53	114	246
2		South	66	54	117	252
3		East	42	1	3	7
4		West	51	6	12	26
5	(2) Sierra College Blvd / Olympus Dr	North	66	54	117	252
6		South	66	51	110	237
7		East	48	3	7	16
8		West	58	15	33	71
9	(3) Sierra College Blvd / Cavitt Stallman Rd	North	66	51	111	239
10		South	65	49	105	226
11		East	52	6	14	29
12		West	--	--	--	--
13	(4) Sierra College Blvd / Douglas Blvd	North	65	50	107	230
14		South	66	55	118	255
15		East	68	78	168	363
16		West	69	80	171	369
17	(5) Sierra College Blvd / Renaissance Creek	North	66	54	115	249
18		South	66	52	112	240
19		East	47	3	7	14
20		West	55	10	22	47
21	(6) Sierra College Blvd / Eureka Rd	North	66	52	112	242
22		South	65	45	97	209
23		East	59	19	42	89
24		West	60	21	45	97

**Table 2**  
**Existing Traffic Noise Modeling Results – Saturday Midday Peak Hour**

Seg.	Intersection	Direction	DNL 100 ft from Roadway	Distance to Contour (ft)		
				70 dB DNL	65 dB DNL	60 dB DNL
25	(7) Cavitt Stallman Rd / Olive Ranch Rd	North	53	7	16	34
26		South	56	13	27	58
27		East	54	8	18	39
28		West	--	--	--	--
29	(8) Cavitt Stallman Rd / Bowman Pl	North	58	16	34	74
30		South	56	13	27	58
31		East	35	0	1	2
32		West	54	8	18	38
33	(9) E Roseville Pkwy / Olympus Dr	North	67	59	126	272
34		South	66	54	117	253
35		East	59	17	37	80
36		West	50	5	10	23
37	(10) E Roseville Pkwy / Douglas Blvd	North	66	58	126	270
38		South	64	41	88	189
39		East	68	79	171	368
40		West	67	67	143	309
41	(11) Cavitt Stallman Rd / Douglas Blvd	North	53	7	16	34
42		South	53	7	16	34
43		East	68	74	159	342
44		West	68	73	158	339
45	(12) Woodgrove Way / Douglas Blvd	North	48	3	7	15
46		South	47	3	7	15
47		East	68	73	157	337
48		West	68	74	160	344
49	(13) Seeno Dr / Douglas Blvd	North	47	3	6	14
50		South	--	--	--	--
51		East	68	72	156	336
52		West	68	73	156	337
53	(14) Barton Rd / Douglas Blvd	North	58	15	33	72
54		South	60	22	47	101
55		East	67	68	146	315
56		West	68	68	147	318
Blank cell = no traffic data was provided						
Source: FHWA-RD-77-108 with inputs from project traffic impact study. Appendix B contains FHWA model inputs.						

**Table 3**  
**Existing Traffic Noise Modeling Results – Sunday Midday Peak Hour**

Seg.	Intersection	Direction	DNL 100 ft from Roadway	Distance to Contour (ft)		
				70 dB DNL	65 dB DNL	60 dB DNL
1	(1) Sierra College Blvd / Miners Ravine Dr	North	66	53	113	244
2		South	66	54	116	251
3		East	54	8	18	38

**Table 3**  
**Existing Traffic Noise Modeling Results – Sunday Midday Peak Hour**

Seg.	Intersection	Direction	DNL 100 ft from Roadway	Distance to Contour (ft)		
				70 dB DNL	65 dB DNL	60 dB DNL
4		West	51	6	12	27
5	(2) Sierra College Blvd / Olympus Dr	North	66	56	121	260
6		South	66	56	120	258
7		East	56	11	24	53
8		West	60	21	45	97
9	(3) Sierra College Blvd / Cavitt Stallman Rd	North	66	56	120	260
10		South	66	54	117	252
11		East	53	7	15	32
12		West	--	--	--	--
13	(4) Sierra College Blvd / Douglas Blvd	North	66	52	112	242
14		South	66	53	115	247
15		East	68	70	150	323
16		West	68	70	152	327
17	(5) Sierra College Blvd / Renaissance Creek	North	66	52	111	240
18		South	66	51	110	237
19		East	45	2	5	10
20		West	55	10	21	44
21	(6) Sierra College Blvd / Eureka Rd	North	66	51	110	236
22		South	65	45	96	208
23		East	58	15	32	70
24		West	59	17	37	80
25	(7) Cavitt Stallman Rd / Olive Ranch Rd	North	56	11	23	51
26		South	59	17	37	80
27		East	55	11	23	50
28		West	--	--	--	--
29	(8) Cavitt Stallman Rd / Bowman Pl	North	60	22	47	101
30		South	59	19	40	87
31		East	31	0	1	1
32		West	56	12	26	57
33	(9) E Roseville Pkwy / Olympus Dr	North	66	56	120	260
34		South	66	50	108	233
35		East	60	20	44	95
36		West	53	7	15	32
37	(10) E Roseville Pkwy / Douglas Blvd	North	66	50	109	234
38		South	63	33	71	154
39		East	68	73	158	340
40		West	67	62	133	286
41	(11) Cavitt Stallman Rd / Douglas Blvd	North	53	7	16	33
42		South	51	6	12	26
43		East	67	68	146	315
44		West	68	69	148	318
45	(12) Woodgrove Way / Douglas Blvd	North	46	3	6	12
46		South	46	3	6	12
47		East	67	67	144	309
48		West	67	68	146	315
49	(13) Seeno Dr / Douglas Blvd	North	48	3	7	16

**Table 3**  
**Existing Traffic Noise Modeling Results – Sunday Midday Peak Hour**

Seg.	Intersection	Direction	DNL 100 ft from Roadway	Distance to Contour (ft)		
				70 dB DNL	65 dB DNL	60 dB DNL
50		South				
51		East	67	66	142	306
52		West	67	67	144	309
53	(14) Barton Rd / Douglas Blvd	North	60	22	47	102
54		South	61	26	55	119
55		East	68	78	169	364
56		West	68	78	167	360
Blank cell = no traffic data was provided						
Source: FHWA-RD-77-108 with inputs from project traffic impact study. Appendix B contains FHWA model inputs.						

### Existing Overall Ambient Noise Environment within the Project Vicinity

The existing ambient noise environment at the project site is defined primarily by noise from traffic on Sierra College Boulevard and Cavitt Stallman Road. To generally quantify existing ambient noise environment within the project vicinity, BAC conducted long-term (continuous) ambient noise level measurements at two (2) locations from November 2-4, 2021. The long-term noise survey locations are shown on Figure 1, identified as sites LT-1 and LT-2. Photographs of the noise survey locations are provided in Appendix C.

Larson Davis Laboratories (LDL) Model LxT precision integrating sound level meters were used to complete the long-term noise level survey. The meters were calibrated immediately before and after use with an LDL Model CA200 acoustical calibrator to ensure the accuracy of the measurements. The equipment used meets all specifications of the American National Standards Institute requirements for Type 1 sound level meters (ANSI S1.4). The results of the long-term ambient noise survey are shown numerically and graphically in Appendices D and E (respectively) and are summarized in Table 4.

**Table 4**  
**Summary of Long-Term Ambient Noise Survey Results – November 2-4, 2021<sup>1</sup>**

Site Description <sup>2</sup>	Date	DNL	Average Measured Hourly Noise Levels (dBA) <sup>3,4</sup>			
			Daytime		Nighttime	
			L <sub>eq</sub>	L <sub>max</sub>	L <sub>eq</sub>	L <sub>max</sub>
LT-1: West of project site near residential uses	11/3/21	72	71	86	64	81
	11/4/21	74	72	88	66	81
LT-2: On project site adjacent to residential uses to the east	11/2 – 11/3	61	61	77	52	71
	11/3 – 11/4	62	61	78	52	73
<sup>1</sup> Detailed summaries of the noise monitoring results are provided in Appendices D and E. <sup>2</sup> Long-term ambient noise monitoring locations are identified on Figure 1. <sup>3</sup> Data presented in terms of Average (Low-High). <sup>4</sup> Daytime hours: 7:00 AM to 10:00 PM   Nighttime hours: 10:00 PM to 7:00 AM Source: Bollard Acoustical Consultants, Inc. (2021)						

Measurement site LT-1 was selected to be representative of the ambient noise level environment at the nearest existing residential uses to the west of the project site, adjacent to Sierra College Boulevard. Noise level measurements obtained at site LT-2 are believed to be representative of the ambient noise level environment at the nearest existing residential uses to the east, adjacent to Cavitt Stallman Road. Upon analysis of the measurement data, it was determined that the existing ambient noise environments at sites LT-1 and LT-2 are defined primarily by noise from traffic on Sierra College Boulevard and Cavitt Stallman Road, respectively.

As shown in Table 4, average measured hourly noise levels were generally consistent at each individual site throughout the monitoring period. The Table 4 data also indicate that measured day-night average noise levels were highest at site LT-1.

### Existing Ambient Vibration Environment

During a BAC site visit on November 5, 2021, vibration levels were below the threshold of perception at the project site. Nonetheless, to quantify existing vibration levels at the project site, BAC conducted short-term (15-minute) vibration measurements at the two (2) locations identified on Figure 1 (sites V-1 and V-2). Photographs of the vibration survey equipment are provided in Appendix C.

A Larson-Davis Laboratories Model LxT precision integrating sound level meter equipped with a vibration transducer was used to complete the measurements. The results are summarized in Table 5.

**Table 5**  
**Summary of Short-Term Ambient Vibration Survey Results – November 5, 2021**

Site Description	Time	Measured Maximum Vibration Level, PPV (in/sec)
V-1: Adjacent to Sierra College Blvd on project site	10:21 a.m.	0.009
V-2: Adjacent to Cavitt Stallman Rd on project site	9:49 a.m.	<0.001
PPV = Peak Particle Velocity (inches/second) Source: Bollard Acoustical Consultants, Inc. (2021)		

The Table 5 data indicate that measured maximum vibration levels within the project area ranged from less than 0.001 to 0.009 PPV in/sec.

## Regulatory Setting: Criteria for Acceptable Noise and Vibration Exposure

### Federal

There are no federal noise or vibration criteria which would be directly applicable to this project. However, Placer County does not currently have a policy for assessing noise impacts associated with increases in ambient noise levels from project-generated noise sources. As a result, the following federal noise criteria was applied to the project.

### Federal Interagency Commission on Noise (FICON)

The Federal Interagency Commission on Noise (FICON) has developed a graduated scale for use in the assessment of project-related noise level increases. The criteria shown in Table 6 was developed by FICON as a means of developing thresholds for impact identification for project-related noise level increases. The FICON standards have been used extensively in recent years in the preparation of the noise sections of Environmental Impact Reports that have been certified in many California cities and counties.

The use of the FICON standards is considered conservative relative to thresholds used by other agencies in the State of California. For example, the California Department of Transportation (Caltrans) requires a project-related traffic noise level increase of 12 dB for a finding of significance, and the California Energy Commission (CEC) considers project-related noise level increases between 5 to 10 dB significant, depending on local factors. Therefore, the use of the FICON standards, which set the threshold for finding of significant noise impacts as low as 1.5 dB, provides a very conservative approach to impact assessment for this project.

**Table 6**  
**Significance of Changes in Cumulative Noise Exposure**

Ambient Noise Level Without Project (DNL)	Change in Ambient Noise Level Due to Project
<60 dB	+5.0 dB or more
60 to 65 dB	+3.0 dB or more
>65 dB	+1.5 dB or more
<i>Source: Federal Interagency Committee on Noise (FICON)</i>	

Based on the FICON research, as shown in Table 6, a 5 dB increase in noise levels due to a project is required for a finding of significant noise impact where ambient noise levels without the project are less than 60 dB DNL. Where pre-project ambient conditions are between 60 and 65 dB DNL, a 3 dB increase is applied as the standard of significance. Finally, in areas already exposed to higher noise levels, specifically pre-project noise levels in excess of 65 dB DNL, a 1.5 dB increase is considered by FICON as the threshold of significance.

### **State of California**

#### California Environmental Quality Act (CEQA)

The State of California has established regulatory criteria that are applicable to this assessment. Specifically, Appendix G of the State of California Environmental Quality Act (CEQA) Guidelines are used to assess the potential significance of impacts pursuant to local General Plan policies, Municipal Code standards, or the applicable standards of other agencies. According to Appendix G of the CEQA guidelines, the project would result in a significant noise or vibration impact if the following occur:

- A. Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or other applicable standards of other agencies.

- B. Generation of excessive groundborne vibration or groundborne noise levels.
- C. For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels.

It should be noted that audibility is not a test of significance according to CEQA. If this were the case, any project which added any audible amount of noise to the environment would be considered significant according to CEQA. Because every physical process creates noise, the use of audibility alone as significance criteria would be unworkable. CEQA requires a substantial increase in noise levels before noise impacts are identified, not simply an audible change.

California Department of Transportation (Caltrans)

Placer County does not currently have adopted standards for groundborne vibration. As a result, the vibration impact criteria developed by the California Department of Transportation (Caltrans) was applied to the project. The Caltrans guidance criteria for building structure and vibration annoyance are presented in Tables 7 and 8, respectively.

**Table 7**  
**Caltrans Guidance for Building Structure Vibration Criteria**

Structure and Condition	Limiting PPV (in/sec)
Historic and some old buildings	0.5
Residential structures	0.5
New residential structures	1.0
Industrial buildings	2.0
Bridges	2.0
PPV = Peak Particle Velocity Source: 2020 Caltrans Transportation and Construction Vibration Guidance Manual, Table 14.	

**Table 8**  
**Caltrans Guidance for Vibration Annoyance Potential Criteria**

Human Response	Maximum PPV (in/sec)	
	Transient Sources	Continuous/Frequent Intermittent Sources
Severe/very disturbing	2.0	0.4 to 3.6
Strongly perceptible	0.9	0.1
Distinctly perceptible	0.24	0.035
Barely/slightly perceptible	0.035	0.012
Note: Transient sources create a single isolated vibration event, such as blasting or drop balls. Continuous/frequent sources include pile drivers, pogo-stick compactors, crack-and-seat equipment, vibratory pile drivers and vibratory compaction equipment. PPV = Peak Particle Velocity Source: 2020 Caltrans Transportation and Construction Vibration Guidance Manual, Tables 4 & 6.		

## Local

### Placer County General Plan

The Noise Element of the Placer County General Plan (Section 9) contains the County's noise-related policies. The specific policies which are generally applicable to this project are reproduced below:

#### **Policies**

- 9.A.2.** Noise created by new proposed non-transportation noise sources shall be mitigated so as not to exceed the noise level standards of Table 9 (GP Table 9-1) as measured immediately within the property line of lands designated for noise-sensitive uses: provided however, the noise created by occasional events occurring within a stadium on land zoned for university purposes may temporarily exceed these standards as provided in an approved Specific Plan.
- 9.A.5.** Where proposed non-residential land uses are likely to produce noise levels exceeding the performance standards of Table 9 (GP Table 9-1) at existing or planned noise-sensitive uses, the County shall require submission of an acoustical analysis as part of the environmental review process so that noise mitigation may be included in the project design.
- 9.A.6.** The feasibility of proposed projects with respect to existing and future transportation noise levels shall be evaluated by comparison to Table 10 (GP Table 9-3).
- 9.A.9.** Noise created by new transportation noise sources, including roadway improvement projects, shall be mitigated so as not to exceed the levels specified in Table 10 or the performance standards in Table 10 at the outdoor activity areas or interior spaces of existing noise-sensitive land uses.
- 9.A.12.** Where noise mitigation measures are required to achieve the standards of Tables 9 and 10, the emphasis of such measures shall be placed upon site planning and project design. The use of noise barriers shall be considered as a means of achieving the noise standards only after all other practical design-related noise mitigation measures have been integrated into the project.

**Table 9**  
**Allowable DNL Noise Levels Within Specified Zone Districts<sup>1</sup>**  
**Applicable to New Projects Affected by or Including Non-Transportation Noise Sources**

Zone District of Receptor	Property Line of Receiving Use	Interior Spaces <sup>2</sup>
Residential Adjacent to Industrial <sup>3</sup>	60	45
Other Residential <sup>4</sup>	50	45
Office/Professional	70	45
Transient Lodging	65	45
Neighborhood Commercial	70	45
General Commercial	70	45
Heavy Commercial	75	45
Limited Industrial	75	45
Highway Service	75	45
Shopping Center	70	45
Industrial	--	45
Industrial Park	75	45
Industrial Reserve	--	45
Airport	--	45
Unclassified	--	--
Farm	(see footnote 6)	--
Agriculture Exclusive	(see footnote 6)	--
Forestry	--	--
Timberland Preserve	--	--
Recreation & Forestry	70	--
Open Space	--	--
Mineral Reserve	--	--

**Notes:**

- Except where noted otherwise, noise exposures will be those which occur at the property line of the receiving use.
- Where existing transportation noise levels exceed the standards of this table, the allowable DNL shall be raised to the same level as that of the ambient level.
- If the noise source generated by, or affecting, the uses shown above consists primarily of speech or music, or if the noise source is impulsive in nature, the noise standards shown above shall be decreased by 5 dB.
- Where a use permit has established noise level standards for an existing use, those standards shall supersede the levels specified in Table 9 and Table 10. Similarly, where an existing use which is not subject to a use permit causes noise in excess of the allowable levels in Tables 9 and 10, said excess noise shall be considered the allowable level. If a new development is proposed which will be affected by noise from such an existing use, it will ordinarily be assumed that the noise levels already existing or those levels allowed by the existing use permit, whichever are greater, are those levels actually produced by the existing use.
- Existing industry located in industrial zones will be given the benefit of the doubt in being allowed to emit increased noise consistent with the state of the art at the time of expansion. In no case will expansion of an existing industrial operation because to decrease allowable noise emission limits. Increased emissions above those normally allowable should be limited to a one-time 5 dB increase at the discretion of the decision making body.
- The noise level standards applicable to land uses containing incidental residential uses, such as caretaker dwellings at industrial facilities and homes on agriculturally zoned land, shall be the standards applicable to the zone district, not those applicable to residential uses.
- Where no noise level standards have been provided for a specific zone district, it is assumed that the interior and/or exterior spaces of these uses are effectively insensitive to noise.

<sup>1</sup> Overriding policy on interpretation of allowable noise levels: Industrial-zoned properties are confined to unique areas of the County and are irreplaceable. Industries which provide primary wage-earner jobs in the County, if forced to relocate, will likely be forced to leave the County. For this reason, industries operating upon industrial zoned properties must be afforded reasonable opportunity to exercise the rights/privileges conferred upon them by their zoning. Whenever the allowable noise levels herein fall subject to interpretation relative to industrial activities, the benefit of the doubt shall be afforded to the industrial use.

Where an industrial use is subject to infrequent and unplanned upset or breakdown of operations resulting in increased noise emissions, where such upsets and breakdowns are reasonable considering the type of industry, and where the industrial use exercises due diligence in preventing as well as correcting such upsets and breakdowns, noise generated during such upsets and breakdowns shall not be included in calculations to determine conformance with allowable noise levels. Interior spaces are

defined as any locations where some degree of noise-sensitivity exists. Examples include all habitable rooms of residences, and areas where communication and speech intelligibility are essential, such as classrooms and offices.

<sup>2</sup> Interior spaces are defined as any locations where some degree of noise-sensitivity exists. Examples include all habitable rooms of residences, and areas where communication and speech intelligibility are essential, such as classrooms and offices.

<sup>3</sup> Noise from industrial operations may be difficult to mitigate in a cost-effective manner. In recognition of this fact, the exterior noise standards for residential zone districts immediately adjacent to industrial, limited industrial, industrial park, and industrial reserve zone districts have been increased by 10 dB as compared to residential districts adjacent to other land uses.

For purposes of the Noise Element, residential zone districts are defined to include the following zoning classifications: AR, R-1, R-2, R-3, FR, RP, TR-1, TR-2, TR-3, and TR-4.

<sup>4</sup> Where a residential zone district is located within an -SP combining district, the exterior noise level standards are applied at the outer boundary of the -SP district. If an existing industrial operation within an -SP district is expanded or modified, the noise level standards at the outer boundary of the -SP district may be increased as described above in these standards.

Where a new residential use is proposed in an -SP zone, an Administrative Review Permit is required, which may require mitigation measures at the residence for noise levels existing and/or allowed by use permit as described under "NOTES," above, in these standards.

<sup>5</sup> State of the art should include the use of modern equipment with lower noise emissions, site design, and plant orientation to mitigate offsite noise impacts, and similar methodology.

<sup>6</sup> Normally, agricultural uses are noise insensitive and will be treated in this way. However, conflicts with agricultural noise emissions can occur where single-family residences exist within agricultural zone districts. Therefore, where effects of agricultural noise upon residences located in these agricultural zones is a concern, an DNL of 70 dBA will be considered acceptable outdoor exposure at a residence.

Source: Placer County General Plan Noise Element, Table 9-1

**Table 10**  
**Maximum Allowable Noise Exposure**  
**Transportation Noise Sources**

Noise Sensitive Land Uses (FY)	Outdoor Activity Areas <sup>1</sup>	Interior Spaces	
	DNL/CNEL (dB)	DNL/CNEL (dB)	L <sub>eq</sub> (dB) <sup>2</sup>
Residential	60 <sup>3</sup>	45	--
Transient Lodging <sup>4</sup>	60 <sup>3</sup>	45	--
Hospitals, Nursing Homes	60 <sup>3</sup>	45	--
Theaters, Auditoriums, Music Halls	--	--	35
Churches, Meeting Halls	60 <sup>3</sup>	--	40
Office Buildings	--	--	45
Schools, Libraries, Museums	--	--	45
Playgrounds, Neighborhood Parks	70	--	--
Notes:			
<sup>1</sup> Where the location of outdoor activity areas is unknown, the exterior noise level standard shall be applied to the property line of the receiving land use.			
<sup>2</sup> As determined for a typical worst-case hour during period of use.			
<sup>3</sup> Where it is not possible to reduce noise in outdoor activity areas to 60 dB DNL /CNEL or less using a practical application of the best-available noise reduction measures, an exterior noise level of up to 65 dB DNL/CNEL may be allowed provided that available exterior noise level reduction measures have been implemented and interior noise levels are in compliance with this table.			
Source: Placer County General Plan Noise Element, Table 9-3			

## Placer County Code

The provisions of the Placer County Code which would be most applicable to this project are reproduced below.

### 9.36.030 Exemptions.

A. Sound or noise emanating from the following sources and activities are exempt from the provisions of this title:

2. Sound sources associated with property maintenance (e.g., lawn mowers, edgers, snow blowers, blowers, pool pumps, power tools, etc.) provided such activities take place between the hours of 7:00 a.m. and 9:00 p.m.
7. Construction (e.g., construction, alteration, or repair activities) between the hours of 6:00 a.m. and 8:00 p.m. Monday through Friday, and between the hours of 8:00 a.m. and 8:00 p.m. Saturday and Sunday provided, however, that all construction equipment shall be fitted with factory installed muffling devices and that all construction equipment shall be maintained in good working order.

#### **9.36.060 Sound limits for sensitive receptors.**

- A. It is unlawful for any person at any location to create any sound, or to allow the creation of any sound, on property owned, leased, occupied, or otherwise controlled by such person that:
  1. Causes the exterior sound level when measured at the property line of any affected sensitive receptor to exceed the ambient sound level by five dBA; or
  2. Exceeds the sound level standards as set forth in the following table, whichever is greater:

Sound Level Descriptor	Daytime (7 AM to 10 PM)	Nighttime (10 PM to 7 AM)
Hourly $L_{eq}$ , dB	55	45
Maximum Level, ( $L_{max}$ ) dB	70	65

- B. Each of the sound level standards specified in the above table shall be reduced by five dB for simple tone noises, consisting of speech and music. However, in no case shall the sound level standard be lower than the ambient sound level plus five dB.
- C. If the intruding sound source is continuous and cannot reasonably be discontinued or stopped for a time period whereby the ambient sound level can be measured, the sound level measured while the source is in operation shall be compared directly to the sound level standards of this section.

#### Adjustments to County Exterior Noise Level Standards Based on Measured Ambient Conditions

As mentioned previously, the nearest off-site noise-sensitive land uses which would potentially be affected by the project consist of residential uses to the east and west of the project area. The Placer County General Plan establishes exterior and interior noise level standards of 60 dB DNL and 45 dB DNL (respectively) for residential uses affected by non-transportation noise sources, such as those proposed by project on-site operations (Table 9 of this report). However, footnote 2 of Table 9 states that where existing transportation noise levels exceed the non-transportation standards of Table 9, the allowable DNL shall be raised to the same level as that of the ambient level.

Section 9.36.060(2) of the Placer County Code establishes sound level limits for sensitive receptors exposed to non-transportation noise sources, such as those proposed by on-site project

operations. Specifically, the County Code establishes hourly average and maximum noise level standards of 55 dB  $L_{eq}$  and 70 dB  $L_{max}$  (respectively) during daytime hours (7:00 a.m. to 10:00 p.m.). The County Code also establishes hourly average and maximum noise level standards of 45 dB  $L_{eq}$  and 65 dB  $L_{max}$  (respectively) during nighttime hours (10:00 p.m. to 7:00 a.m.). However, County Code Section 9.36.060(A) states that non-transportation noise sources shall not exceed the measured ambient noise level at the sensitive receptor by 5 dB or exceed the noise level standards specified above, whichever is greater.

As discussed previously, BAC conducted a long-term (continuous) ambient noise level survey at two (2) locations from November 2-4, 2021. The noise measurement locations are identified as sites LT-1 and LT-2 on Figure 1. The results from the ambient noise level survey are summarized in Table 2. Measurement sites LT-1 and LT-2 were selected to be representative of the ambient noise level environments at the nearest existing residential uses to the west and east of the project site, respectively. The nearest residential uses are represented as receivers R-1 through R-6 on Figure 1.

Comparison of ambient noise level data contained in Table 2 and the Placer County General Plan and County Code non-transportation noise standards revealed that the County's criteria are being exceeded at the measurement sites, representative of the ambient noise level environment at the nearest residential uses. Based on the results from the BAC ambient noise survey, and pursuant to the General Plan and County Code adjustment criteria discussed above, the following noise level standards shown in Tables 11 and 12 have been applied to project on-site noise sources and assessed at the nearest residential receivers.

According to the project description, the proposed hours of operation for the facility are 8:00 a.m. to 10:00 p.m. Because the project proposes on-site operations during daytime hours only, the County Code's nighttime noise level standards would not be applicable to this project.

**Table 11**  
**Placer County General Plan Exterior Noise Level Standards Applied to the Project**

Residential Receiver	Representative Measurement Site	Measured Noise Level, DNL (dB) <sup>1</sup>	Unadjusted Noise Standard, DNL (dB) <sup>2</sup>	Adjustment for Ambient?	Applied Noise Level Standard, DNL (dB) <sup>3</sup>
R-1, R-2, R-3	LT-1	72	60	Yes	72
R-4, R-5, R-6	LT-2	61	60	Yes	61
<sup>1</sup> Lowest measured DNL at monitoring location during BAC noise survey. <sup>2</sup> Unadjusted General Plan noise level standard applicable to residential uses. <sup>3</sup> Applied noise level standards based upon BAC ambient noise survey and Placer County General Plan ambient noise adjustment criteria.					

**Table 12**  
**Placer County Code Daytime Exterior Noise Level Standards Applied to the Project**

Residential Receiver	Representative Measurement Site	Measured Noise Levels (dB) <sup>1</sup>		Unadjusted Noise Standards (dB) <sup>2</sup>		Adjustment for Ambient?		Applied Noise Level Standards (dB) <sup>3</sup>	
		L <sub>eq</sub>	L <sub>max</sub>	L <sub>eq</sub>	L <sub>max</sub>	L <sub>eq</sub>	L <sub>max</sub>	L <sub>eq</sub>	L <sub>max</sub>
R-1, R-2, R-3	LT-1	71	86	55	70	Yes	Yes	76	91
R-4, R-5, R-6	LT-2	61	77	55	70	Yes	Yes	66	82
<sup>1</sup> Lowest average measured hourly daytime noise levels at monitoring location during BAC noise survey. <sup>2</sup> Unadjusted County Code daytime noise level standards applicable to sensitive receptors (residential). <sup>3</sup> Applied daytime noise level standards based upon BAC ambient noise survey and Placer County Code ambient noise adjustment criteria.									

## Impacts and Mitigation Measures

### Thresholds of Significance

For the purposes of this assessment, a noise and vibration impact is considered significant if the project would result in:

- Generation of a substantial temporary or permanent increase in ambient noise levels in the vicinity of the project in excess of standards established in the local general plan or noise ordinance, or other applicable standards of other agencies; or
- Generation of excessive groundborne vibration or groundborne noise levels; or
- For a project located within the vicinity of a private airstrip or an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels.

The project site is not within the vicinity of a private airstrip, an airport land use plan, or within two miles of a public airport. Therefore, the last threshold listed above is not discussed further.

The following criteria based on standards established by the California Department of Transportation (Caltrans), Placer County General Plan and County Code were used to evaluate the significance of environmental noise and vibration resulting from the project:

- A significant noise impact would be identified if the project would expose persons to or generate noise levels that would exceed applicable noise standards presented in the Placer County General Plan or County Code.
- A significant impact would be identified if off-site traffic noise exposure or on-site activities generated by the project would substantially increase noise levels at existing sensitive receptors in the vicinity. A substantial increase would be identified relative to the Federal Interagency Commission on Noise (FICON) noise level increase significance criteria presented in Table 6.
- A significant impact would be identified if project construction activities or proposed on-site operations would expose noise-sensitive receptors to excessive groundborne vibration levels. Specifically, an impact would be identified if groundborne vibration levels due to these sources would exceed the Caltrans vibration impact criteria.

### Noise Impacts Associated with Project-Generated Increases in Off-Site Traffic

With development of the project, traffic volumes on the local roadway network will increase. Those increases in daily traffic volumes will result in a corresponding increase in traffic noise levels at existing uses located along those roadways. The FHWA Model was used with traffic input data from the transportation impact analysis prepared by KD Anderson & Associates, Inc.

to predict project traffic noise level increases relative to Existing and Existing Plus Project conditions.

### **Impact 1: Increases in Existing Traffic Noise Levels due to the Project**

Traffic data in the form of Weekday PM, Saturday Midday and Sunday Midday peak hour movements for existing conditions were obtained from the project draft traffic impact study prepared by KD Anderson & Associates, Inc. Average daily traffic volumes were conservatively estimated by applying a factor of 10 to peak hour conditions.

Existing versus Existing Plus Project traffic noise levels on the local roadway network are shown in Table 13. The following section includes an assessment of predicted traffic noise levels relative to the FICON noise level increase significance criteria presented in Table 6. The data presented in Tables 13-15 are provided in terms of DNL at a standard distance of 100 feet from the centerlines of the project-area roadways. Appendix B contains the FHWA Model inputs.

It should be noted that in many cases, the actual distances to noise level contours may vary from the distances predicted by the FHWA Model. Factors such as roadway curvature, roadway grade, shielding from local topography or structures, elevated roadways, or elevated receivers may affect actual sound propagation. It is also recognized that existing sensitive land uses within the project vicinity are located varying distances from the centerlines of the local roadway network. The 100-foot reference distance is utilized in this assessment to provide a reference position at which changes in existing traffic noise levels resulting from the project can be evaluated.

**Table 13**  
**Traffic Noise Modeling Results and Project-Related Traffic Noise Level Increases**  
**Existing vs. Existing Plus Project Conditions – Weekday PM Peak Hour Inputs**

Seg.	Intersection	Direction	Traffic Noise Level at 100 feet, DNL (dB)			Substantial Increase?
			E	E+P	Increase	
1	(1) Sierra College Blvd / Miners Ravine Dr	North	67.8	67.8	0.0	No
2		South	67.9	67.9	0.0	No
3		East	46.5	48.1	1.6	No
4		West	52.8	52.9	0.1	No
5	(2) Sierra College Blvd / Olympus Dr	North	67.9	67.9	0.0	No
6		South	67.3	67.4	0.1	No
7		East	51.5	51.6	0.1	No
8		West	60.4	60.4	0.0	No
9	(3) Sierra College Blvd / Cavitt Stallman Rd	North	67.4	67.5	0.1	No
10		South	66.9	67.0	0.1	No
11		East	54.8	54.8	0.0	No
12		West	--	--	--	--
13	(4) Sierra College Blvd / Douglas Blvd	North	66.8	66.9	0.1	No
14		South	67.3	67.4	0.1	No
15		East	69.0	69.0	0.0	No
16		West	69.1	69.1	0.0	No
17	(5) Sierra College Blvd / Renaissance Creek	North	67.4	67.4	0.0	No
18		South	67.4	67.4	0.0	No
19		East	51.7	51.7	0.0	No

**Table 13**  
**Traffic Noise Modeling Results and Project-Related Traffic Noise Level Increases**  
**Existing vs. Existing Plus Project Conditions – Weekday PM Peak Hour Inputs**

Seg.	Intersection	Direction	Traffic Noise Level at 100 feet, DNL (dB)			Substantial Increase?
			E	E+P	Increase	
20		West	55.0	55.0	0.0	No
21	(6) Sierra College Blvd / Eureka Rd	North	67.4	67.4	0.0	No
22		South	66.5	66.5	0.0	No
23		East	60.4	60.4	0.0	No
24		West	61.5	61.5	0.0	No
25	(7) Cavitt Stallman Rd / Olive Ranch Rd	North	55.4	55.4	0.0	No
26		South	58.7	58.7	0.0	No
27		East	56.1	56.1	0.0	No
28		West	--	--	--	--
29	(8) Cavitt Stallman Rd / Bowman Pl	North	59.9	60.0	0.1	No
30		South	58.6	58.6	0.0	No
31		East	36.0	36.0	0.0	No
32		West	56.4	56.4	0.0	No
33	(9) E Roseville Pkwy / Olympus Dr	North	68.2	68.2	0.0	No
34		South	67.8	67.8	0.0	No
35		East	61.1	61.1	0.0	No
36		West	55.0	55.0	0.0	No
37	(10) E Roseville Pkwy / Douglas Blvd	North	67.8	67.0	-0.8	No
38		South	65.6	64.2	-1.4	No
39		East	69.5	69.5	0.0	No
40		West	68.4	68.4	0.0	No
41	(11) Cavitt Stallman Rd / Douglas Blvd	North	54.7	54.7	0.0	No
42		South	53.7	53.7	0.0	No
43		East	68.8	68.8	0.0	No
44		West	68.8	68.8	0.0	No
45	(12) Woodgrove Way / Douglas Blvd	North	46.9	47.0	0.1	No
46		South	48.3	48.3	0.0	No
47		East	68.7	68.7	0.0	No
48		West	68.8	68.8	0.0	No
49	(13) Seeno Dr / Douglas Blvd	North	47.9	47.9	0.0	No
50		South	--	--	--	--
51		East	68.7	68.7	0.0	No
52		West	68.7	68.7	0.0	No
53	(14) Barton Rd / Douglas Blvd	North	59.4	59.4	0.0	No
54		South	61.4	61.5	0.1	No
55		East	68.6	68.6	0.0	No
56		West	68.5	68.5	0.0	No

Blank cell = no traffic data was provided

Source: FHWA-RD-77-108 with inputs from project traffic impact study. Appendix B contains FHWA Model inputs.

**Table 14**  
**Traffic Noise Modeling Results and Project-Related Traffic Noise Level Increases**  
**Existing vs. Existing Plus Project Conditions – Saturday Midday Peak Hour Inputs**

Seg.	Intersection	Direction	Traffic Noise Level at 100 feet, DNL (dB)			Substantial Increase?
			E	E+P	Increase	
1	(1) Sierra College Blvd / Miners Ravine Dr	North	65.9	65.9	0.0	No
2		South	66.0	66.2	0.2	No
3		East	42.3	48.0	5.7	Yes
4		West	51.1	51.2	0.1	No
5	(2) Sierra College Blvd / Olympus Dr	North	66.0	66.2	0.2	No
6		South	65.6	65.8	0.2	No
7		East	47.9	48.7	0.8	No
8		West	57.8	58.0	0.2	No
9	(3) Sierra College Blvd / Cavitt Stallman Rd	North	65.7	65.8	0.1	No
10		South	65.3	65.5	0.2	No
11		East	52.0	52.0	0.0	No
12		West	--	--	--	--
13	(4) Sierra College Blvd / Douglas Blvd	North	65.4	65.6	0.2	No
14		South	66.1	66.1	0.0	No
15		East	68.4	68.4	0.0	No
16		West	68.5	68.5	0.0	No
17	(5) Sierra College Blvd / Renaissance Creek	North	65.9	66.0	0.1	No
18		South	65.7	65.8	0.1	No
19		East	47.3	47.3	0.0	No
20		West	55.1	55.1	0.0	No
21	(6) Sierra College Blvd / Eureka Rd	North	65.7	65.8	0.1	No
22		South	64.8	64.8	0.0	No
23		East	59.3	59.3	0.0	No
24		West	59.8	59.9	0.1	No
25	(7) Cavitt Stallman Rd / Olive Ranch Rd	North	53.0	53.2	0.2	No
26		South	56.5	56.6	0.1	No
27		East	53.9	53.9	0.0	No
28		West	--	--	--	--
29	(8) Cavitt Stallman Rd / Bowman Pl	North	58.1	58.2	0.1	No
30		South	56.5	56.6	0.1	No
31		East	34.5	34.5	0.0	No
32		West	53.7	54.0	0.3	No
33	(9) E Roseville Pkwy / Olympus Dr	North	66.5	66.6	0.1	No
34		South	66.0	66.0	0.0	No
35		East	58.5	58.7	0.2	No
36		West	50.3	50.3	0.0	No
37	(10) E Roseville Pkwy / Douglas Blvd	North	66.5	65.9	-0.6	No
38		South	64.1	63.1	-1.0	No
39		East	68.5	68.5	0.0	No
40		West	67.3	67.4	0.1	No
41	(11) Cavitt Stallman Rd / Douglas Blvd	North	53.0	53.1	0.1	No
42		South	53.0	53.0	0.0	No
43		East	68.0	68.0	0.0	No
44		West	68.0	68.0	0.0	No

**Table 14**  
**Traffic Noise Modeling Results and Project-Related Traffic Noise Level Increases**  
**Existing vs. Existing Plus Project Conditions – Saturday Midday Peak Hour Inputs**

Seg.	Intersection	Direction	Traffic Noise Level at 100 feet, DNL (dB)			Substantial Increase?
			E	E+P	Increase	
45	(12) Woodgrove Way / Douglas Blvd	North	47.6	47.7	0.1	No
46		South	47.4	47.5	0.1	No
47		East	67.9	67.9	0.0	No
48		West	68.1	68.1	0.0	No
49	(13) Seeno Dr / Douglas Blvd	North	47.0	47.1	0.1	No
50		South	--	--	--	--
51		East	67.9	67.9	0.0	No
52		West	67.9	67.9	0.0	No
53	(14) Barton Rd / Douglas Blvd	North	57.8	57.8	0.0	No
54		South	60.1	60.1	0.0	No
55		East	67.5	67.5	0.0	No
56		West	67.5	67.6	0.1	No
Blank cell = no traffic data was provided						
Source: FHWA-RD-77-108 with inputs from project traffic impact study. Appendix B contains FHWA Model inputs.						

**Table 15**  
**Traffic Noise Modeling Results and Project-Related Traffic Noise Level Increases**  
**Existing vs. Existing Plus Project Conditions – Sunday Midday Peak Hour Inputs**

Seg.	Intersection	Direction	Traffic Noise Level at 100 feet, DNL (dB)			Substantial Increase?
			E	E+P	Increase	
1	(1) Sierra College Blvd / Miners Ravine Dr	North	65.8	65.9	-0.1	No
2		South	66.0	66.1	-0.1	No
3		East	53.6	54.2	-0.6	No
4		West	51.5	51.5	0.0	No
5	(2) Sierra College Blvd / Olympus Dr	North	66.2	66.4	-0.2	No
6		South	66.2	66.3	-0.1	No
7		East	55.8	55.9	-0.1	No
8		West	59.8	59.9	-0.1	No
9	(3) Sierra College Blvd / Cavitt Stallman Rd	North	66.2	66.3	-0.1	No
10		South	66.0	66.1	-0.1	No
11		East	52.6	52.6	0.0	No
12		West	--	--	--	--
13	(4) Sierra College Blvd / Douglas Blvd	North	65.8	65.9	-0.1	No
14		South	65.9	65.9	0.0	No
15		East	67.6	67.6	0.0	No
16		West	67.7	67.7	0.0	No
17	(5) Sierra College Blvd / Renaissance Creek	North	65.7	65.7	0.0	No
18		South	65.6	65.7	-0.1	No
19		East	45.2	45.2	0.0	No
20		West	54.7	54.7	0.0	No

**Table 15**  
**Traffic Noise Modeling Results and Project-Related Traffic Noise Level Increases**  
**Existing vs. Existing Plus Project Conditions – Sunday Midday Peak Hour Inputs**

Seg.	Intersection	Direction	Traffic Noise Level at 100 feet, DNL (dB)			Substantial Increase?
			E	E+P	Increase	
21	(6) Sierra College Blvd / Eureka Rd	North	65.6	65.6	0.0	No
22		South	64.8	64.8	0.0	No
23		East	57.6	57.7	-0.1	No
24		West	58.6	58.6	0.0	No
25	(7) Cavitt Stallman Rd / Olive Ranch Rd	North	55.6	55.6	0.0	No
26		South	58.5	58.6	-0.1	No
27		East	55.4	55.5	-0.1	No
28		West	--	--	--	--
29	(8) Cavitt Stallman Rd / Bowman Pl	North	60.0	60.1	-0.1	No
30		South	59.1	59.2	-0.1	No
31		East	30.5	30.5	0.0	No
32		West	56.3	56.4	-0.1	No
33	(9) E Roseville Pkwy / Olympus Dr	North	66.2	66.2	0.0	No
34		South	65.5	65.5	0.0	No
35		East	59.7	59.8	-0.1	No
36		West	52.5	52.5	0.0	No
37	(10) E Roseville Pkwy / Douglas Blvd	North	65.5	65.5	0.0	No
38		South	62.8	62.8	0.0	No
39		East	68.0	68.0	0.0	No
40		West	66.9	66.9	0.0	No
41	(11) Cavitt Stallman Rd / Douglas Blvd	North	52.9	53.0	-0.1	No
42		South	51.3	51.3	0.0	No
43		East	67.5	67.5	0.0	No
44		West	67.5	67.6	-0.1	No
45	(12) Woodgrove Way / Douglas Blvd	North	46.4	46.5	-0.1	No
46		South	46.2	46.3	-0.1	No
47		East	67.4	67.4	0.0	No
48		West	67.5	67.5	0.0	No
49	(13) Seeno Dr / Douglas Blvd	North	48.0	48.1	-0.1	No
50		South	--	--	--	--
51		East	67.3	67.3	0.0	No
52		West	67.4	67.4	0.0	No
53	(14) Barton Rd / Douglas Blvd	North	60.1	60.1	0.0	No
54		South	61.2	61.2	0.0	No
55		East	68.4	68.4	0.0	No
56		West	68.3	68.4	-0.1	No

Blank cell = no traffic data was provided

Source: FHWA-RD-77-108 with inputs from project traffic impact study. Appendix B contains FHWA Model inputs.

As stated previously, the FHWA Model does not account for non-traffic ambient noise sources such as nearby wildlife or other anthropogenic noise sources within an area. Consideration of such sources typically results in higher ambient noise levels (i.e., existing no project) than those predicted by the FHWA Model alone.

As indicated in Table 14, the proposed project's contribution to traffic noise level increases is predicted to exceed applicable FICON increase significance criteria along one roadway segment evaluated in the existing conditions analysis (Saturday MIDDAY Peak Hour) – segment 3, the primary access point to the facility located on the project parcel. Specifically, the traffic noise level increase along roadway segment 3 is calculated to 5.7 dB DNL.

As discussed above, baseline ambient conditions are considerably higher than baseline traffic noise levels alone. When project traffic noise generation is compared to the measured ambient day-night average (DNL) level along roadway segment 3 (62 dB DNL at site LT-2), no project-related traffic noise level increase is calculated to occur along the roadway segment. Rather, the project-generated traffic noise level along roadway segment 3 is calculated to be less than the measured ambient noise level of 62 dB DNL and would result in a project-generated noise level increase of less than 1 dB. This is a more accurate representation of actual project-related noise level increases than the “traffic-only” noise increases shown in Tables 13-15. Thus, project-related increases in traffic noise levels would not substantially exceed measured ambient noise conditions in the project area relative to the applicable FICON criteria. Finally, although existing residential uses were not identified within 100 feet from the centerline of roadway segment 3 (located on the project parcel), it should be noted that the predicted Existing Plus Project (Saturday MIDDAY Peak Hour) traffic noise level of approximately 48 dB DNL at 100 feet along the segment is well below the Placer County General Plan exterior noise level standard of 60 dB DNL applicable to traffic noise affecting residential uses.

Based on the analysis presented above, including consideration of measured ambient noise conditions within the project area, off-site traffic noise impacts related to increases in traffic resulting from the implementation of the project are identified as being ***less than significant***.

### **Off-Site Noise Impacts Associated with Proposed On-Site Activities**

The primary noise sources associated with the project have been identified as soccer field activities, facility landscape maintenance equipment, children's play area activities, and parking area movements. An assessment of project-related park activity noise levels at the nearest existing noise-sensitive uses follows. As discussed previously, the proposed hours of operation for the facility are 8:00 a.m. to 10:00 p.m. (i.e., during daytime hours only).

#### **Impact 2: Soccer Field Activity Noise at Existing Residential Uses**

According to the project site plan shown on Figure 2, the facility will have a total of three (3) soccer fields available for designated gameplay and one smaller warm-up area. For the purposes of this analysis, the soccer fields designated for gameplay have been identified as Fields 1-3 on Figure 2. As illustrated in the project site plan, the largest soccer field can be split to allow for two games simultaneously.

It is the experience of BAC that noise levels generated by soccer field activities are primarily associated with shouting and cheering during gameplay. To predict soccer field activity noise levels at the nearest existing residential receivers, BAC file data for soccer fields were used. BAC file data indicate that noise levels of similar-sized soccer fields are measured to be approximately 60 dB  $L_{eq}$  and 70 dB  $L_{max}$  at a distance of 100 feet from the focal point of the field. To quantify

soccer field activity noise level exposure relative to the General Plan's day-night average noise level (DNL) and County Code's hourly average ( $L_{eq}$ ) and maximum ( $L_{max}$ ) noise descriptors, it was conservatively assumed that all three soccer fields could have continuous and concurrent gameplay throughout the facility's hours of operation (8:00 a.m. to 10:00 p.m.).

Using the reference noise levels above, and assuming standard spherical spreading loss (-6 dB per doubling of distance), data were projected from the effective noise center of each of the soccer fields to the nearest existing residential uses (receivers R-1 through R-6) and the results of those projections relative to the applicable Placer County General Plan and County Code noise level standards are summarized in Table 16.

**Table 16**  
**Predicted Soccer Field Activity Noise Levels at Existing Residential Uses**

Residential Receiver <sup>1</sup>	Field	Distance (ft) <sup>2</sup>	Combined Noise Levels (dB) <sup>3,4</sup>			Applied County Standards (dB) <sup>5</sup>		
			DNL	$L_{eq}$	$L_{max}$	DNL	$L_{eq}$	$L_{max}$
R-1	1	540						
	2	700	42	44	54	72	76	91
	3	650						
R-2	1	420						
	2	500	46	48	58	72	76	91
	3	320						
R-3	1	500						
	2	505	46	48	58	72	76	91
	3	280						
R-4	1	365						
	2	440	50	52	62	61	66	82
	3	650						
R-5	1	350						
	2	330	51	53	63	61	66	82
	3	550						
R-6	1	500						
	2	370	50	52	62	61	66	82
	3	580						

<sup>1</sup> Residential receivers are identified on Figure 1.

<sup>2</sup> Distances scaled from center of fields to receiver property lines using provided site plans.

<sup>3</sup> Combined noise level exposure from concurrent and continuous activities on all three fields from 8 am to 10 pm.

<sup>4</sup> Noise levels at receivers R-1 through R-3 include a conservative offset of -5 dB for shielding that would be provided by the existing sound wall constructed along the property lines.

<sup>5</sup> Applied noise standards based on BAC noise survey results and County adjustment criteria.

Source: Bollard Acoustical Consultants, Inc. (2021)

### Assessment Relative to General Plan Noise Level Criteria

As indicated in Table 16, combined (worst-case) noise exposure from soccer field activities is predicted to comply with the applicable (adjusted) Placer County General Plan exterior day-night average noise level (DNL) standards at the nearest existing residential receivers. In addition,

standard residential construction typically results in an exterior to interior noise reduction of approximately 25 dB with windows closed and approximately 15 dB with windows open. Given the noise reduction typically achieved from standard residential construction cited above and based on the predicted exterior noise levels in Table 16, project soccer field activity noise level exposure is expected to comply with the Placer County General Plan 45 dB interior noise level standard within the interior areas of the nearest residential receivers. It should be noted that the Placer County General Plan non-transportation noise level standards shall be decreased (downward-adjusted) by 5 dB for noise sources consisting primarily of speech (i.e., shouting and cheering during soccer games). Nonetheless, the predicted soccer field noise levels shown in Table 16 would still be well below the General Plan's downward-adjusted noise level criteria.

BAC measurement site LT-1 was selected to be representative of the ambient noise level environments at residential receivers R-1 through R-3. Measurement site LT-2 was selected to be representative of the ambient noise level environments at residential receivers R-4 through R-6. The Table 4 data indicate that measured day-night average noise levels at site LT-1 were approximately 72 dB DNL. The Table 4 data further indicate that measured day-night average noise levels at site LT-2 were approximately 61 dB DNL. Based on the FICON increase significance criteria presented in Table 6, a 5 dB increase in noise levels due to a project is required for a finding of significant noise impact where ambient noise levels without the project are less than 60 dB DNL. Where pre-project ambient conditions are between 60 dB DNL and 65 dB DNL, a 3 dB increase is applied as the standard of significance. Finally, in areas already exposed to higher noise levels, specifically pre-project noise levels in excess of 65 dB DNL, a 1.5 dB increase is considered by FICON as the threshold of significance. Thus, a project-generated increase in noise levels of 1.5 dB or more would be required for a finding of a significant impact at residential receivers R-1 through R-3. Further, a project-generated increase in noise levels of 3.0 dB or more would warrant a significant impact at residential receivers R-4 through R-6.

Given the measured day-night average noise levels of 72 dB DNL and 61 dB DNL cited above and based on the predicted noise levels presented in Table 16, the increases in ambient day-night average noise levels resulting from project soccer field activities are calculated to be 0.4 dB DNL or less at residential receivers R-1 through R-6, which would not exceed the applicable FICON increase significance criteria.

#### Assessment Relative to County Code Noise Level Criteria

The Table 16 data indicate that combined (worst-case) noise exposure from soccer field activities is predicted to comply with the applicable (adjusted) Placer County Code exterior daytime hourly average ( $L_{eq}$ ) and maximum ( $L_{max}$ ) noise level standards at the nearest existing residential receivers. It should be noted that the Placer County Code's noise level limits shall be reduced by 5 dB for noise sources consisting of speech (i.e., shouting and cheering during soccer games) *provided* that the downward-adjusted standard is not lower than the ambient sound level plus 5 dB. However, based on the results from the BAC ambient noise level survey, the speech-related downward adjustment to the County Code's noise level criteria would not be applicable to this analysis.

BAC measurement site LT-1 was selected to be representative of the ambient noise level environments at residential receivers R-1 through R-3. Measurement site LT-2 was selected to

be representative of the ambient noise level environments at residential receivers R-4 through R-6. The Table 4 data indicate that measured daytime average hourly and maximum noise levels at site LT-1 were approximately 71 dB  $L_{eq}$  and 86 dB  $L_{max}$ , respectively. The Table 4 data further indicate that measured daytime average hourly and maximum noise levels at site LT-2 were approximately 61 dB  $L_{eq}$  and 77 dB  $L_{max}$ , respectively. As mentioned previously, a project-generated increase in noise levels of 1.5 dB or more would be required for a finding of a significant impact at residential receivers R-1 through R-3. Further, a project-generated increase in noise levels of 3.0 dB or more would warrant a significant impact at residential receivers R-4 through R-6.

Given the measured daytime average hourly and maximum noise levels of 71 dB  $L_{eq}$  and 86 dB  $L_{max}$  cited above and based on the predicted noise levels presented in Table 16, the increases in ambient hourly average and maximum noise levels resulting from project soccer field activities are calculated to be 0.7 dB  $L_{eq}$  /  $L_{max}$  or less at residential receivers R-1 through R-6, which would not exceed the applicable FICON increase significance criteria.

Because noise exposure from project soccer field activities is predicted to satisfy applicable Placer County General Plan and County Code noise level standards at the nearest existing residential uses, and because noise exposure from soccer field activities is not expected to significantly increase ambient noise levels at those uses relative to the applicable FICON criteria, this impact is identified as being ***less than significant***.

### **Impact 3: Landscape Maintenance Equipment Noise at Existing Residential Uses**

It is expected that various types of landscape maintenance equipment will be utilized on facility grounds. Primary noise sources associated with project landscape maintenance activities have been identified as a riding mower, weed eater and a backpack blower. To quantify facility landscape maintenance equipment noise levels at the nearest existing residential receivers, BAC utilized published reference sound level data from the University of Florida Environmental Health and Safety Services. The reference maximum sound levels for the equipment identified above is provided below in Table 17.

**Table 17**  
**Reference Maximum Sound Levels for Common Landscape Maintenance Equipment**

<b>Equipment</b>	<b>Reference Maximum Sound Level at 3 Feet (dB)</b>
Riding Lawn Mower	90
Weed Eater	96
Backpack Blower	99
<i>Source: University of Florida Environmental Health and Safety Services</i>	

Placer County Code Section 9.36.030(A)(2) exempts sound sources associated with property maintenance (e.g., lawn mowers, blowers, power tools, etc.) provided such activities take place between the hours of 7:00 a.m. and 9:00 p.m. As noted previously, project facility hours of operation are from 8:00 a.m. to 10:00 p.m. It is reasonably assumed for the purposes of this analysis that all project facility maintenance activities would occur during day light hours and the hours exempted by County Code Section 9.36.030(A)(2). As a result, this analysis of facility

landscape maintenance equipment noise levels focuses on compliance with applicable Placer County General Plan noise level criteria only.

To quantify facility landscape maintenance equipment noise level exposure relative to the General Plan's day-night average noise level (DNL), the number of hours the equipment would be in operation must be known. For the purposes of this analysis, it was conservatively assumed that landscape maintenance activities would occur concurrently and continuously on facility grounds from the hours of 8:00 a.m. to 3:00 p.m. (7 continuous hours). It was further assumed that reference hourly average ( $L_{eq}$ ) sound levels associated with the identified equipment would be approximately 10 dB less than the provided reference maximum ( $L_{max}$ ) sound levels in Table 17.

Based on the information and assumptions above, and assuming standard spherical spreading loss (-6 dB per doubling of distance), data were projected from the effective noise center of equipment activity to the nearest existing residential uses (receivers R-1 through R-6) and the results of those projections relative to the applicable Placer County General Plan noise level standards are summarized in Table 18.

**Table 18**  
**Predicted Landscape Maintenance Equipment Noise Levels at Existing Residential Uses**

Residential Receiver <sup>1</sup>	Source	Distance (ft) <sup>2</sup>	Combined Noise Level, DNL (dB) <sup>3,4</sup>	Applied County Standard, DNL (dB) <sup>5</sup>
R-1	Riding Mower	590	40	72
	Weed Eater	320		
	Blower	350		
R-2	Riding Mower	300	42	72
	Weed Eater	300		
	Blower	275		
R-3	Riding Mower	265	40	72
	Weed Eater	340		
	Blower	340		
R-4	Riding Mower	380	48	61
	Weed Eater	275		
	Blower	230		
R-5	Riding Mower	315	47	61
	Weed Eater	175		
	Blower	375		
R-6	Riding Mower	425	46	61
	Weed Eater	315		
	Blower	300		

<sup>1</sup> Residential receivers are identified on Figure 1.

<sup>2</sup> Distances scaled from effective noise center of activity to receiver property lines using provided site plans.

<sup>3</sup> Combined noise level exposure from concurrent and continuous activities from 8 am to 3 pm.

<sup>4</sup> Noise levels at receivers R-1 through R-3 include a conservative offset of -5 dB for shielding that would be provided by the existing sound wall constructed along the property lines.

<sup>5</sup> Applied noise standards based on BAC noise survey results and County adjustment criteria.

Source: Bollard Acoustical Consultants, Inc. (2021)



### Assessment Relative to General Plan Noise Level Criteria

The Table 18 data indicate that combined noise exposure from project landscape maintenance equipment is predicted to comply with the applicable (adjusted) Placer County General Plan exterior day-night average noise level (DNL) standards at the nearest existing residential receivers. In addition, standard residential construction typically results in an exterior to interior noise reduction of approximately 25 dB with windows closed and approximately 15 dB with windows open. Given the noise reduction typically achieved from standard residential construction cited above and based on the predicted exterior noise levels in Table 18, project landscape maintenance equipment noise level exposure is expected to comply with the Placer County General Plan 45 dB interior noise level standard within the interior areas of the nearest residential receivers.

BAC measurement site LT-1 was selected to be representative of the ambient noise level environments at residential receivers R-1 through R-3. Measurement site LT-2 was selected to be representative of the ambient noise level environments at residential receivers R-4 through R-6. The Table 4 data indicate that measured day-night average noise levels at site LT-1 were approximately 72 dB DNL. The Table 4 data further indicate that measured day-night average noise levels at site LT-2 were approximately 61 dB DNL. As mentioned previously, a project-generated increase in noise levels of 1.5 dB or more would be required for a finding of a significant impact at residential receivers R-1 through R-3 according to the FICON increase significance criteria. Further, a project-generated increase in noise levels of 3.0 dB or more would warrant a significant impact at residential receivers R-4 through R-6 relative to the FICON criteria.

Given the measured day-night average noise levels of 72 dB DNL and 61 dB DNL cited above and based on the predicted noise levels presented in Table 18, the increases in ambient day-night average noise levels resulting from project landscape maintenance equipment are calculated to be 0.2 dB DNL or less at residential receivers R-1 through R-6, which would not exceed the applicable FICON increase significance criteria.

Because noise exposure from project landscape maintenance equipment operations is reasonably assumed to exempt from applicable Placer County Code noise level criteria, and because project maintenance equipment noise levels are predicted to satisfy applicable Placer County General Plan and FICON increase significance criteria at the nearest existing residential uses, this impact is identified as being ***less than significant***.

#### **Impact 4: Children's Play Area Noise at Existing Residential Uses**

A children's play area will be located north of Field 1 adjacent to the segment of Bayside Drive on the project property (location shown on Figure 2). For the assessment of play area noise impacts, noise level data collected by BAC staff at various outdoor play areas in recent years was utilized. The primary noise source associated with play area use is shouting children. BAC file data indicate that average and maximum noise levels of similar sized outdoor play areas are approximately 55 dB  $L_{eq}$  and 75 dB  $L_{max}$  at a distance of 50 feet from the focal point of the play area. To quantify play area noise level exposure relative to the General Plan's day-night average noise level (DNL) and County Code's hourly average ( $L_{eq}$ ) and maximum ( $L_{max}$ ) noise descriptors,

it was conservatively assumed that the play area could have continuous activity throughout the facility's hours of operation (8:00 a.m. to 10:00 p.m.).

Using the reference noise levels above, and assuming standard spherical spreading loss (-6 dB per doubling of distance), data were projected from the play area to the nearest existing residential uses (receivers R-1 through R-6) and the results of those projections relative to the applicable Placer County General Plan and County Code noise level standards are summarized in Table 19.

**Table 19**  
**Predicted Children's Play Area Noise Levels at Existing Residential Uses**

Residential Receiver <sup>1</sup>	Distance (ft) <sup>2</sup>	Predicted Noise Levels (dB) <sup>3,4</sup>			Applied County Standards (dB) <sup>5</sup>		
		DNL	L <sub>eq</sub>	L <sub>max</sub>	DNL	L <sub>eq</sub>	L <sub>max</sub>
R-1	350	31	33	53	72	76	91
R-2	300	32	34	54			
R-3	520	28	30	50			
R-4	390	35	37	57	61	66	82
R-5	415	35	37	57			
R-6	660	31	33	53			

<sup>1</sup> Residential receivers are identified on Figure 1.  
<sup>2</sup> Distances scaled from center of play area to receiver property lines using provided site plans.  
<sup>3</sup> Predicted noise levels conservatively assume continuous play area activity from 8 am to 10 pm.  
<sup>4</sup> Noise levels at receivers R-1 through R-3 include a conservative offset of -5 dB for shielding that would be provided by the existing sound wall constructed along the property lines.  
<sup>5</sup> Applied noise standards based on BAC noise survey results and County adjustment criteria.  
Source: Bollard Acoustical Consultants, Inc. (2021)

#### Assessment Relative to General Plan Noise Level Criteria

As indicated in Table 19, facility play area noise exposure is predicted to comply with the applicable (adjusted) Placer County General Plan exterior day-night average noise level (DNL) standards at the nearest existing residential receivers. In addition, standard residential construction typically results in an exterior to interior noise reduction of approximately 25 dB with windows closed and approximately 15 dB with windows open. Given the noise reduction typically achieved from standard residential construction cited above and based on the predicted exterior noise levels in Table 19, project play area activity noise level exposure is expected to comply with the Placer County General Plan 45 dB interior noise level standard within the interior areas of the nearest residential receivers. It should be noted that the Placer County General Plan non-transportation noise level standards shall be decreased (downward-adjusted) by 5 dB for noise sources consisting primarily of speech (i.e., shouting children within play areas). Nonetheless, the predicted project play area noise levels shown in Table 19 above would still be well below the General Plan's downward-adjusted noise level criteria.

BAC measurement site LT-1 was selected to be representative of the ambient noise level environments at residential receivers R-1 through R-3. Measurement site LT-2 was selected to be representative of the ambient noise level environments at residential receivers R-4 through R-6. The Table 4 data indicate that measured day-night average noise levels at site LT-1 were approximately 72 dB DNL. The Table 4 data further indicate that measured day-night average

noise levels at site LT-2 were approximately 61 dB DNL. Based on the FICON increase significance criteria presented in Table 6, a 5 dB increase in noise levels due to a project is required for a finding of significant noise impact where ambient noise levels without the project are less than 60 dB DNL. Where pre-project ambient conditions are between 60 dB DNL and 65 dB DNL, a 3 dB increase is applied as the standard of significance. Finally, in areas already exposed to higher noise levels, specifically pre-project noise levels in excess of 65 dB DNL, a 1.5 dB increase is considered by FICON as the threshold of significance. Thus, a project-generated increase in noise levels of 1.5 dB or more would be required for a finding of a significant impact at residential receivers R-1 through R-3. Further, a project-generated increase in noise levels of 3.0 dB or more would warrant a significant impact at residential receivers R-4 through R-6.

Given the measured day-night average noise levels of 72 dB DNL and 61 dB DNL cited above and based on the predicted noise levels presented in Table 19, the increase in ambient day-night average noise levels resulting from project play area activities are calculated to be less than 0.1 dB DNL at residential receivers R-1 through R-6, which would not exceed the applicable FICON increase significance criteria.

#### Assessment Relative to County Code Noise Level Criteria

The Table 19 data indicate that project play area noise level exposure is predicted to comply with the applicable (adjusted) Placer County Code exterior daytime hourly average ( $L_{eq}$ ) and maximum ( $L_{max}$ ) noise level standards at the nearest existing residential receivers. It should be noted that the Placer County Code's noise level limits shall be reduced by 5 dB for noise sources consisting of speech (i.e., shouting children within play areas) *provided* that the downward-adjusted standard is not lower than the ambient sound level plus 5 dB. However, based on the results from the BAC ambient noise level survey, the speech-related downward adjustment to the County Code's noise level criteria would not be applicable to this analysis.

BAC measurement site LT-1 was selected to be representative of the ambient noise level environments at residential receivers R-1 through R-3. Measurement site LT-2 was selected to be representative of the ambient noise level environments at residential receivers R-4 through R-6. The Table 4 data indicate that measured daytime average hourly and maximum noise levels at site LT-1 were approximately 71 dB  $L_{eq}$  and 86 dB  $L_{max}$ , respectively. The Table 4 data further indicate that measured daytime average hourly and maximum noise levels at site LT-2 were approximately 61 dB  $L_{eq}$  and 77 dB  $L_{max}$ , respectively. As mentioned previously, a project-generated increase in noise levels of 1.5 dB or more would be required for a finding of a significant impact at residential receivers R-1 through R-3. Further, a project-generated increase in noise levels of 3.0 dB or more would warrant a significant impact at residential receivers R-4 through R-6.

Given the measured daytime average hourly and maximum noise levels of 71 dB  $L_{eq}$  and 86 dB  $L_{max}$  cited above and based on the predicted noise levels presented in Table 19, the increases in ambient hourly average and maximum noise levels resulting from project play area activity are calculated to be less than 0.1 dB  $L_{eq}$  /  $L_{max}$  at residential receivers R-1 through R-6, which would not exceed the applicable FICON increase significance criteria.

Because noise exposure from project play area activity is predicted to satisfy applicable Placer County General Plan and County Code noise level standards at the nearest existing residential uses, and because noise exposure from play area activity is not expected to significantly increase ambient noise levels at those uses relative to the applicable FICON criteria, this impact is identified as being ***less than significant***.

#### **Impact 5:      Parking Area Noise at Existing Residential Uses**

The project will have parking areas on north, east and south ends of the facility property. For the purposes of this analysis, the parking areas are identified as Parking 1-3 on Figure 2. As a means of determining potential noise exposure due to project parking lot activities, Bollard Acoustical Consultants, Inc. (BAC) utilized specific parking lot noise level measurements conducted by BAC. Specifically, a series of individual noise measurements were conducted of multiple vehicle types arriving and departing a parking area, including engines starting and stopping, car doors opening and closing, and persons conversing as they entered and exited the vehicles. The results of those measurements revealed that individual parking lot movements generated mean noise levels of approximately 70 dB SEL at a reference distance of 50 feet. The maximum noise level associated with parking lot activity typically did not exceed 65 dB L<sub>max</sub> at the same reference distance.

To compute hourly average (L<sub>eq</sub>) noise levels generated by parking lot activities, the approximate number of hourly operations in any given area and distance to the effective noise center of those activities is required. Based on the project site plan, a total of approximately 262 parking spaces stalls will be constructed on the property (Parking 1 – 90 spaces, Parking 2 – 30 spaces, Parking 3 – 142 spaces). It was conservatively assumed for the purposes of this analysis that all stalls within the nearest parking areas to residential uses could fill or empty during a given peak hour (worst-case). The hourly average noise level generated by parking lot movements is computed using the following formula:

$$\text{Peak Hour } L_{eq} = 70 + 10 \cdot \log(N) - 35.6$$

Where 70 is the mean Sound Exposure Level (SEL) for an automobile parking lot arrival or departure, N is the number of parking lot operations in a given hour, and 35.6 is 10 times the logarithm of the number of seconds in an hour. To calculate project parking activity noise generation relative to the Placer County General Plan day-night average (DNL) noise level criteria, it was conservatively assumed that worst-case peak hour parking activity could occur during every hour of facility operations (i.e., 8:00 a.m. to 10:00 p.m.).

Using the information provided above, and assuming standard spherical spreading loss (-6 dB per doubling of distance), worst-case project parking activity noise exposure at the nearest existing residential uses (receivers R-1 through R-6) was calculated and the results of those calculations relative to the applicable Placer County General Plan and County Code noise level standards are summarized in Table 20.

**Table 20**  
**Predicted Parking Area Noise Levels at Existing Residential Uses**

Residential Receiver <sup>1</sup>	Nearest Parking Area	Distance (ft) <sup>2</sup>	Combined Noise Levels (dB) <sup>3,4</sup>			Applied County Standards (dB) <sup>5</sup>		
			DNL	L <sub>eq</sub>	L <sub>max</sub>	DNL	L <sub>eq</sub>	L <sub>max</sub>
R-1	1	465	28	30	41	72	76	91
R-2	1	490	27	29	40	72	76	91
R-3	3	585	28	30	39	72	76	91
R-4	1	190	42	44	57	61	66	82
	2	180						
R-5	1	275	44	46	60	61	66	82
	2	100						
	3	370						
R-6	2	320	39	41	52	61	66	82
	3	310						

<sup>1</sup> Residential receivers are identified on Figure 1.

<sup>2</sup> Distances scaled from effective noise center of parking area to receiver property lines using provided site plans.

<sup>3</sup> Combined noise level exposure from worst-case activities/movements at nearest parking areas.

<sup>4</sup> Noise levels at receivers R-1 through R-3 include a conservative offset of -5 dB for shielding that would be provided by the existing sound wall constructed along the property lines.

<sup>5</sup> Applied noise standards based on BAC noise survey results and County adjustment criteria.

Source: Bollard Acoustical Consultants, Inc. (2021)

#### Assessment Relative to General Plan Noise Level Criteria

The Table 20 data indicate that worst-case facility parking area noise exposure is predicted to comply with the applicable (adjusted) Placer County General Plan exterior day-night average noise level (DNL) standards at the nearest existing residential receivers. Given the aforementioned exterior to interior noise reduction typically achieved from standard residential construction and based on the predicted exterior noise levels in Table 20, project parking area noise level exposure is expected to comply with the Placer County General Plan 45 dB interior noise level standard within the interior areas of the nearest residential receivers.

BAC measurement site LT-1 was selected to be representative of the ambient noise level environments at residential receivers R-1 through R-3. Measurement site LT-2 was selected to be representative of the ambient noise level environments at residential receivers R-4 through R-6. The Table 4 data indicate that measured day-night average noise levels at site LT-1 were approximately 72 dB DNL. The Table 4 data further indicate that measured day-night average noise levels at site LT-2 were approximately 61 dB DNL. Based on the FICON increase significance criteria presented in Table 6, a 5 dB increase in noise levels due to a project is required for a finding of significant noise impact where ambient noise levels without the project are less than 60 dB DNL. Where pre-project ambient conditions are between 60 dB DNL and 65 dB DNL, a 3 dB increase is applied as the standard of significance. Finally, in areas already exposed to higher noise levels, specifically pre-project noise levels in excess of 65 dB DNL, a 1.5 dB increase is considered by FICON as the threshold of significance. Thus, a project-generated increase in noise levels of 1.5 dB or more would be required for a finding of a significant impact

at residential receivers R-1 through R-3. Further, a project-generated increase in noise levels of 3.0 dB or more would warrant a significant impact at residential receivers R-4 through R-6.

Given the measured day-night average noise levels of 72 dB DNL and 61 dB DNL cited above and based on the predicted noise levels presented in Table 20, the increases in ambient day-night average noise levels resulting from project parking area movements are calculated to be 0.1 dB DNL or less at residential receivers R-1 through R-6, which would not exceed the applicable FICON increase significance criteria.

#### Assessment Relative to County Code Noise Level Criteria

The Table 20 data indicate that worst-case project parking noise level exposure is predicted to comply with the applicable (adjusted) Placer County Code exterior daytime hourly average ( $L_{eq}$ ) and maximum ( $L_{max}$ ) noise level standards at the nearest existing residential receivers.

BAC measurement site LT-1 was selected to be representative of the ambient noise level environments at residential receivers R-1 through R-3. Measurement site LT-2 was selected to be representative of the ambient noise level environments at residential receivers R-4 through R-6. The Table 4 data indicate that measured daytime average hourly and maximum noise levels at site LT-1 were approximately 71 dB  $L_{eq}$  and 86 dB  $L_{max}$ , respectively. The Table 4 data further indicate that measured daytime average hourly and maximum noise levels at site LT-2 were approximately 61 dB  $L_{eq}$  and 77 dB  $L_{max}$ , respectively. As mentioned previously, a project-generated increase in noise levels of 1.5 dB or more would be required for a finding of a significant impact at residential receivers R-1 through R-3. Further, a project-generated increase in noise levels of 3.0 dB or more would warrant a significant impact at residential receivers R-4 through R-6.

Given the measured daytime average hourly and maximum noise levels of 71 dB  $L_{eq}$  and 86 dB  $L_{max}$  cited above and based on the predicted noise levels presented in Table 20, the increases in ambient hourly average and maximum noise levels resulting from project parking movements are calculated to be 0.1 dB  $L_{eq}$  /  $L_{max}$  or less at residential receivers R-1 through R-6, which would not exceed the applicable FICON increase significance criteria.

Because noise exposure from project parking movements is predicted to satisfy applicable Placer County General Plan and County Code noise level standards at the nearest existing residential uses, and because noise exposure from parking activities is not expected to significantly increase ambient noise levels at those uses relative to the applicable FICON criteria, this impact is identified as being ***less than significant***.

#### **Impact 6: Cumulative (Combined) Noise Levels from On-Site Sources at Existing Residential Uses**

The calculated cumulative (combined) noise level exposure from analyzed on-site noise sources at the nearest existing residential uses (receivers R-1 through R-6) is presented in Table 21. It should be noted that due to the logarithmic nature of the decibel scale, the sum of two noise values which differ by 10 dB equates to an overall increase in noise levels of 0.4 dB. When the noise sources are equivalent, the sum would result in an overall increase in noise levels of 3 dB.

**Table 21**  
**Predicted Cumulative On-Site Operations Noise Levels at Existing Residential Uses**

Residential Receiver	Predicted Noise Levels (dB)												Calculated Cumulative (dB) <sup>1</sup>			Applied County Standards (dB) <sup>2</sup>		
	Soccer Fields			Maint. Equipment			Play Area			Parking								
	DNL	Leq	L <sub>max</sub>	DNL	Leq	L <sub>max</sub>	DNL	Leq	L <sub>max</sub>	DNL	Leq	L <sub>max</sub>	DNL	Leq	L <sub>max</sub>	DNL	Leq	L <sub>max</sub>
R-1	42	44	54	40	--	--	31	33	53	28	30	41	44	44	57	72	76	91
R-2	46	48	58	42	--	--	32	34	54	27	29	40	48	48	60	72	76	91
R-3	46	48	58	40	--	--	28	30	50	28	30	39	47	48	59	72	76	91
R-4	50	52	62	48	--	--	35	37	57	42	44	57	53	53	64	61	66	82
R-5	51	53	63	47	--	--	35	37	57	44	46	60	53	54	65	61	66	82
R-6	50	52	62	46	--	--	31	33	53	39	41	52	52	52	62	61	66	82

<sup>1</sup> Calculated cumulative noise levels based on predicted noise levels presented in Impacts 2-5

<sup>2</sup> Applied noise standards based on BAC noise survey results and County adjustment criteria.

Source: Bollard Acoustical Consultants, Inc. (2021)

### Assessment Relative to General Plan Noise Level Criteria

As indicated in Table 21, the calculated cumulative (combined) noise level exposure from on-site noise sources would comply with the applicable (adjusted) Placer County General Plan exterior day-night average noise level (DNL) standards at the nearest existing residential receivers. In addition, standard residential construction typically results in an exterior to interior noise reduction of approximately 25 dB with windows closed and approximately 15 dB with windows open. Given the noise reduction typically achieved from standard residential construction cited above and based on the calculated combined exterior noise levels in Table 21, cumulative noise level exposure from on-site operations is expected to comply with the Placer County General Plan 45 dB interior noise level standard within the interior areas of the nearest residential receivers.

BAC measurement site LT-1 was selected to be representative of the ambient noise level environments at residential receivers R-1 through R-3. Measurement site LT-2 was selected to be representative of the ambient noise level environments at residential receivers R-4 through R-6. The Table 4 data indicate that measured day-night average noise levels at site LT-1 were approximately 72 dB DNL. The Table 4 data further indicate that measured day-night average noise levels at site LT-2 were approximately 61 dB DNL. Based on the FICON increase significance criteria presented in Table 6, a 5 dB increase in noise levels due to a project is required for a finding of significant noise impact where ambient noise levels without the project are less than 60 dB DNL. Where pre-project ambient conditions are between 60 dB DNL and 65 dB DNL, a 3 dB increase is applied as the standard of significance. Finally, in areas already exposed to higher noise levels, specifically pre-project noise levels in excess of 65 dB DNL, a 1.5 dB increase is considered by FICON as the threshold of significance. Thus, a project-generated increase in noise levels of 1.5 dB or more would be required for a finding of a significant impact at residential receivers R-1 through R-3. Further, a project-generated increase in noise levels of 3.0 dB or more would warrant a significant impact at residential receivers R-4 through R-6.

Given the measured day-night average noise levels of 72 dB DNL and 61 dB DNL cited above and based on the calculated combined noise levels presented in Table 21, the increases in ambient day-night average noise levels resulting from project parking area movements are calculated to be 0.7 dB DNL or less at residential receivers R-1 through R-6, which would not exceed the applicable FICON increase significance criteria.

### Assessment Relative to County Code Noise Level Criteria

The Table 21 data indicate that calculated cumulative (combined) noise level exposure from on-site noise sources would comply with the applicable (adjusted) Placer County Code exterior daytime hourly average ( $L_{eq}$ ) and maximum ( $L_{max}$ ) noise level standards at the nearest existing residential receivers.

BAC measurement site LT-1 was selected to be representative of the ambient noise level environments at residential receivers R-1 through R-3. Measurement site LT-2 was selected to be representative of the ambient noise level environments at residential receivers R-4 through R-6. The Table 4 data indicate that measured daytime average hourly and maximum noise levels at site LT-1 were approximately 71 dB  $L_{eq}$  and 86 dB  $L_{max}$ , respectively. The Table 4 data further indicate that measured daytime average hourly and maximum noise levels at site LT-2 were

approximately 61 dB  $L_{eq}$  and 77 dB  $L_{max}$ , respectively. As mentioned previously, a project-generated increase in noise levels of 1.5 dB or more would be required for a finding of a significant impact at residential receivers R-1 through R-3. Further, a project-generated increase in noise levels of 3.0 dB or more would warrant a significant impact at residential receivers R-4 through R-6.

Given the measured daytime average hourly and maximum noise levels of 71 dB  $L_{eq}$  and 86 dB  $L_{max}$  cited above and based on the predicted noise levels presented in Table 21, the increases in ambient hourly average and maximum noise levels resulting from project parking movements are calculated to be 0.8 dB  $L_{eq}$  /  $L_{max}$  or less at residential receivers R-1 through R-6, which would not exceed the applicable FICON increase significance criteria.

Because calculated cumulative (combined) noise exposure from project on-site operations is would satisfy applicable Placer County General Plan and County Code noise level standards at the nearest existing residential uses, and because cumulative noise exposure is not expected to significantly increase ambient noise levels at those uses relative to the applicable FICON criteria, this impact is identified as being ***less than significant***.

## **Noise Impacts Associated with Project On-Site Construction Activities**

### **Impact 7: On-Site Construction Noise Levels at Existing Residential Uses**

During project construction, heavy equipment would be used for grading excavation, paving, and structure construction, which would increase ambient noise levels when in use. Noise levels would vary depending on the type of equipment used, how it is operated, and how well it is maintained. Noise exposure at any single point outside the project work area would also vary depending upon the proximity of equipment activities to that point. The property boundaries of the nearest existing residential uses (east of project site across Cavitt Stallman Road) are located approximately 100 feet away from where construction activities could occur within the project area.

Table 22 includes the range of maximum noise levels for equipment commonly used in general construction projects at full-power operation at a distance of 50 feet. Not all of these construction activities would be required of this project. The Table 22 data also include predicted maximum equipment noise levels at property boundaries of the nearest residential uses located approximately 100 feet away, which assume a standard spherical spreading loss of 6 dB per doubling of distance.

It should be noted that Placer County Code Section 9.36.030(A)(7) exempts noise sources associated with construction activities provided such activities occur between the hours of 6:00 a.m. and 8:00 p.m. Monday through Friday, and between the hours of 8:00 a.m. and 8:00 p.m. Saturday and Sunday provided, however, that all construction equipment is fitted with factory installed muffling devices and that all construction equipment shall be maintained in good working order. It is reasonably assumed for the purposes of this analysis that all noise-generating project construction equipment and activities would occur pursuant to County Code Section 9.36.030(A)(7) and would thereby be exempt from County Code noise level criteria. As a result,

this analysis of project construction equipment noise levels focuses on compliance with applicable Placer County General Plan noise level criteria only.

**Table 22**  
**Reference and Projected Noise Levels for Construction Equipment**

Equipment Description	Reference Maximum Noise Level at 50 Feet (dBA)	Projected Maximum Noise Level at 100 feet (dBA)
Air compressor	80	74
Backhoe	80	74
Ballast equalizer	82	76
Ballast tamper	83	77
Compactor	82	76
Concrete mixer	85	79
Concrete pump	82	76
Concrete vibrator	76	70
Crane, mobile	83	77
Dozer	85	79
Generator	82	79
Grader	85	76
Impact wrench	85	79
Loader	80	79
Paver	85	74
Pneumatic tool	85	79
Pump	77	79
Saw	76	71
Scarifier	83	70
Scraper	85	77
Shovel	82	79
Spike driver	77	76
Tie cutter	84	71
Tie handler	80	78
Tie inserter	85	74
Truck	84	79

*Source: Federal Transit Administration Noise and Vibration Impact Assessment Manual, Table 7-1 (2018)*

Based on the equipment noise levels in Table 22, worst-case on-site project construction equipment maximum noise levels at the property lines of the nearest residential uses located 100 feet away are expected to range from approximately 70 to 79 dB. However, the predicted project construction equipment maximum noise levels of 70 to 79 dB are within the range of ambient daytime maximum noise levels measured within close proximity to those residences (BAC ambient measurement site LT-2). Nonetheless, depending upon the location, equipment types and associated duration of operations within the project area, it is possible that worst-case on-site project construction noise levels could potentially exceed the applicable Placer County General Plan noise level limits at a portion of the nearest residential uses. As a result, noise impacts associated with project on-site construction activities are identified as being **potentially significant**.

#### **Mitigation for Impact 7: On-Site Construction Noise Control Measures**

MM-7: To the maximum extent practical, the following measures should be incorporated into the project on-site construction operations:

- Pursuant to County Code Section 9.36.030(A)(7), noise-generating on-site construction activities should occur between the hours of 6:00 a.m. and 8:00 p.m. Monday through Friday, and between the hours of 8:00 a.m. and 8:00 p.m. Saturday and Sunday.
- Pursuant to County Code Section 9.36.030(A)(7), all noise-producing project equipment and vehicles using internal-combustion engines shall be equipped with manufacturers-recommended mufflers and be maintained in good working condition.
- All mobile or fixed noise-producing equipment used on the project site that are regulated for noise output by a federal, state, or local agency shall comply with such regulations while in the course of project activity.
- Electrically powered equipment shall be used instead of pneumatic or internal-combustion-powered equipment, where feasible.
- Material stockpiles and mobile equipment staging, parking, and maintenance areas shall be located as far as practicable from noise-sensitive uses.
- Project area and site access road speed limits shall be established and enforced during the construction period.
- Nearby residences shall be notified of construction schedules so that arrangements can be made, if desired, to limit their exposure to short-term increases in ambient noise levels.

**Significance of Impact 7 after Mitigation: *Less than Significant***

**Vibration Impacts Associated with Project Activities**

**Impact 8: Vibration Generated by Project Construction and On-Site Operations**

During project construction, heavy equipment would be used for grading, excavation, paving, and building construction, which would generate localized vibration in the immediate vicinity of the construction. The nearest identified existing off-site structures (residences east of Cavitt Stallman Road) are located approximately 130 feet from where from construction activities which could occur within the project area.

Table 23 includes the range of vibration levels for equipment commonly used in general construction projects at a distance of 25 feet. The Table 23 data also include projected equipment vibration levels at the nearest existing residences to the project area located approximately 130 feet away.

**Table 23**  
**Reference and Projected Vibration Source Amplitudes for Construction Equipment**

<b>Equipment</b>	<b>Reference PPV at 25 Feet (in/sec)<sup>1</sup></b>	<b>Projected PPV at 130 Feet (in/sec)</b>
Vibratory roller	0.210	0.018
Hoe ram	0.089	0.008
Large bulldozer	0.089	0.008
Caisson drilling	0.089	0.008
Loaded trucks	0.076	0.006
Jackhammer	0.035	0.003
Small bulldozer	0.003	<0.001
<sup>1</sup> PPV = Peak Particle Velocity Source: 2018 FTA Transit Noise and Vibration Impact Assessment Manual (Table 7-4) and BAC calculations		

As shown in Table 23, vibration levels generated from project construction activities at the nearest residences located approximately 130 feet away are predicted to be well below the Caltrans thresholds for damage to residential structures of 0.5 in/sec PPV shown in Table 7 (building structure vibration criteria). In addition, the projected equipment vibration levels in Table 23 are below the threshold for a barely/slightly perceptible human response as defined by Caltrans in Table 8 (vibration annoyance potential threshold criteria). Therefore, on-site construction within the project area is not expected to result in excessive groundborne vibration levels at nearby existing residential uses.

Results from the ambient vibration level monitoring at the project site (Table 5) indicate that measured average vibration levels were below the strictest Caltrans thresholds for damage to structures and thresholds for annoyance. Therefore, it is expected that the project would not result in the exposure of persons to excessive groundborne vibration levels at proposed uses of the project.

Finally, the project consists of the development of recreation uses. It is the experience of BAC these uses do not typically have equipment that generates appreciable vibration. Further, it is our understanding that the project does not propose equipment that will produce appreciable vibration.

Because vibration levels due to and upon the proposed project are expected to satisfy the applicable Caltrans groundborne impact vibration criteria, this impact is considered to be ***less than significant***.

## Noise Impacts Upon the Development

The California Supreme Court issued an opinion in *California Building Industry Association v. Bay Area Air Quality Management District (2015)* holding that CEQA is primarily concerned with the impacts of a project on the environment and generally does not require agencies to analyze the impact of existing conditions on a project's future users or residents. Nevertheless, Placer County has policies that address existing/future conditions affecting the proposed project, which are discussed in the following section.

### On-Site Traffic Noise Impacts

#### Impact 9: Future Exterior Traffic Noise Levels at Project Recreation Uses

The FHWA Model was used with future traffic data to predict future Sierra College Boulevard and Cavitt Stallman Road traffic noise levels at the recreation uses of the development. The future (Existing Plus Project) average daily traffic (ADT) volumes for the roadways were calculated using data provided in the draft traffic impact study prepared for the project by KD Anderson & Associates, Inc. Specifically, future Sierra College Boulevard and Cavitt Stallman Road average daily traffic (ADT) volume was conservatively estimated by applying a factor of 10 to reported peak hour conditions. The predicted future traffic noise levels at the project site are summarized in Table 24. Detailed FHWA Model inputs and results are provided in Appendix F.

**Table 24**  
**Predicted Future Exterior Traffic Noise Levels at Project Recreation Uses**

Roadway	Nearest Recreation Receivers <sup>1</sup>	Distance from Roadway Centerline (ft) <sup>2</sup>	Exterior DNL (dB) <sup>3</sup>
Sierra College Blvd.	Soccer field 2	180	63
	Warm-up area	150	65
	Children's play area	220	62
	Picnic area	135	65
Cavitt Stallman Rd.	Soccer field 2	280	48
	Soccer field 3	300	47
	Children's play area	350	46
<sup>1</sup> Locations of receivers are shown on Figure 2. <sup>2</sup> Distances scaled using provided site plans. <sup>3</sup> A complete listing of FHWA Model inputs and results are provided in Appendix F. Source: Bollard Acoustical Consultants, Inc. (2021)			

As indicated in Table 24, predicted future (Existing Plus Project) Sierra College Boulevard and Cavitt Stallman Road traffic noise level exposure at the project site would satisfy the Placer County General Plan 70 dB DNL exterior noise level standard applicable to recreation uses. As a result, this impact is identified as being **less than significant**.

This concludes BAC's noise and vibration assessment of the Bayside Church Phase 2 (Bayside Fields) project in Placer County, California. Please contact BAC at (530) 537-2328 or [dariog@bacnoise.com](mailto:dariog@bacnoise.com) if you have any comments or questions regarding this report.

## Appendix A

### Acoustical Terminology

<b>Acoustics</b>	The science of sound.
<b>Ambient Noise</b>	The distinctive acoustical characteristics of a given space consisting of all noise sources audible at that location. In many cases, the term ambient is used to describe an existing or pre-project condition such as the setting in an environmental noise study.
<b>Attenuation</b>	The reduction of an acoustic signal.
<b>A-Weighting</b>	A frequency-response adjustment of a sound level meter that conditions the output signal to approximate human response.
<b>Decibel or dB</b>	Fundamental unit of sound. A Bell is defined as the logarithm of the ratio of the sound pressure squared over the reference pressure squared. A Decibel is one-tenth of a Bell.
<b>CNEL</b>	Community Noise Equivalent Level. Defined as the 24-hour average noise level with noise occurring during evening hours (7 - 10 p.m.) weighted by a factor of three and nighttime hours weighted by a factor of 10 prior to averaging.
<b>Frequency</b>	The measure of the rapidity of alterations of a periodic signal, expressed in cycles per second or hertz.
<b>IIC</b>	Impact Insulation Class (IIC): A single-number representation of a floor/ceiling partition's impact generated noise insulation performance. The field-measured version of this number is the FIIC.
<b>Ldn</b>	Day/Night Average Sound Level. Similar to CNEL but with no evening weighting.
<b>Leq</b>	Equivalent or energy-averaged sound level.
<b>Lmax</b>	The highest root-mean-square (RMS) sound level measured over a given period of time.
<b>Loudness</b>	A subjective term for the sensation of the magnitude of sound.
<b>Masking</b>	The amount (or the process) by which the threshold of audibility is for one sound is raised by the presence of another (masking) sound.
<b>Noise</b>	Unwanted sound.
<b>Peak Noise</b>	The level corresponding to the highest (not RMS) sound pressure measured over a given period of time. This term is often confused with the "Maximum" level, which is the highest RMS level.
<b>RT<sub>60</sub></b>	The time it takes reverberant sound to decay by 60 dB once the source has been removed.
<b>STC</b>	Sound Transmission Class (STC): A single-number representation of a partition's noise insulation performance. This number is based on laboratory-measured, 16-band (1/3-octave) transmission loss (TL) data of the subject partition. The field-measured version of this number is the FSTC.



# Appendix B-1

## FHWA Highway Traffic Noise Prediction Model Data Inputs Bayside Fields

File Name: 01 Existing - Weekday PM Peak Hour

Model Run Date: 11/2/2021



Segment	Intersection	Direction	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance
1	Sierra College Blvd / Miners Ravine Dr	North	23,080	83	17	2	1	50	100
2		South	23,280	83	17	2	1	50	100
3		East	790	83	17	1	1	25	100
4		West	2,350	83	17	1	1	30	100
5	Sierra College Blvd / Olympus Dr	North	23,410	83	17	2	1	50	100
6		South	26,910	83	17	2	1	45	100
7		East	2,500	83	17	1	1	25	100
8		West	7,540	83	17	1	1	40	100
9	Sierra College Blvd / Cavitt Stallman Rd	North	27,470	83	17	2	1	45	100
10		South	24,540	83	17	2	1	45	100
11		East	5,290	83	17	1	1	25	100
12		West							
13	Sierra College Blvd / Douglas Blvd	North	23,980	83	17	2	1	45	100
14		South	26,860	83	17	2	1	45	100
15		East	39,400	83	17	2	1	45	100
16		West	40,040	83	17	2	1	45	100
17	Sierra College Blvd / Renaissance Creek	North	27,420	83	17	2	1	45	100
18		South	27,470	83	17	2	1	45	100
19		East	2,590	83	17	1	1	25	100
20		West	5,640	83	17	1	1	25	100
21	Sierra College Blvd / Eureka Rd	North	27,100	83	17	2	1	45	100
22		South	22,340	83	17	2	1	45	100
23		East	9,790	83	17	2	1	35	100
24		West	9,350	83	17	2	1	40	100
25	Cavitt Stallman Rd / Olive Ranch Rd	North	2,280	83	17	2	1	40	100
26		South	4,900	83	17	2	1	40	100
27		East	2,800	83	17	1	1	40	100
28		West							
29	Cavitt Stallman Rd / Bowman Pl	North	4,900	83	17	2	1	45	100
30		South	3,590	83	17	2	1	45	100
31		East	70	83	17	1	1	25	100
32		West	5,340	83	17	1	1	30	100
33	E Roseville Pkwy / Olympus Dr	North	32,570	83	17	2	1	45	100
34		South	29,960	83	17	2	1	45	100
35		East	8,880	83	17	1	1	40	100
36		West	3,910	83	17	1	1	30	100
37	E Roseville Pkwy / Douglas Blvd	North	29,850	83	17	2	1	45	100
38		South	17,930	83	17	2	1	45	100
39		East	43,870	83	17	2	1	45	100
40		West	34,010	83	17	2	1	45	100
41	Cavitt Stallman Rd / Douglas Blvd	North	4,850	83	17	2	1	25	100
42		South	3,890	83	17	2	1	25	100
43		East	37,770	83	17	2	1	45	100
44		West	37,810	83	17	2	1	45	100
45	Woodgrove Way / Douglas Blvd	North	870	83	17	1	1	25	100
46		South	1,210	83	17	1	1	25	100
47		East	37,050	83	17	2	1	45	100
48		West	37,750	83	17	2	1	45	100
49	Seeno Dr / Douglas Blvd	North	1,090	83	17	1	1	25	100
50		South							
51		East	36,780	83	17	2	1	45	100
52		West	36,990	83	17	2	1	45	100
53	Barton Rd / Douglas Blvd	North	5,780	83	17	2	1	40	100
54		South	6,900	83	17	2	1	45	100
55		East	35,760	83	17	2	1	45	100
56		West	35,020	83	17	2	1	45	100

# Appendix B-2

## FHWA Highway Traffic Noise Prediction Model Data Inputs

### Bayside Fields

File Name: 02 Existing - Saturday Midday Peak Hour

Model Run Date: 11/2/2021



Segment	Intersection	Direction	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance
1	Sierra College Blvd / Miners Ravine Dr	North	14,710	83	17	2	1	50	100
2		South	15,270	83	17	2	1	50	100
3		East	300	83	17	1	1	25	100
4		West	1,580	83	17	1	1	30	100
5	Sierra College Blvd / Olympus Dr	North	15,250	83	17	2	1	50	100
6		South	18,060	83	17	2	1	45	100
7		East	1,100	83	17	1	1	25	100
8		West	4,150	83	17	1	1	40	100
9	Sierra College Blvd / Cavitt Stallman Rd	North	18,320	83	17	2	1	45	100
10		South	16,870	83	17	2	1	45	100
11		East	2,810	83	17	1	1	25	100
12		West							
13	Sierra College Blvd / Douglas Blvd	North	17,310	83	17	2	1	45	100
14		South	20,150	83	17	2	1	45	100
15		East	34,300	83	17	2	1	45	100
16		West	35,200	83	17	2	1	45	100
17	Sierra College Blvd / Renaissance Creek	North	19,440	83	17	2	1	45	100
18		South	18,480	83	17	2	1	45	100
19		East	960	83	17	1	1	25	100
20		West	5,680	83	17	1	1	25	100
21	Sierra College Blvd / Eureka Rd	North	18,620	83	17	2	1	45	100
22		South	14,990	83	17	2	1	45	100
23		East	7,630	83	17	2	1	35	100
24		West	6,340	83	17	2	1	40	100
25	Cavitt Stallman Rd / Olive Ranch Rd	North	1,330	83	17	2	1	40	100
26		South	2,940	83	17	2	1	40	100
27		East	1,690	83	17	1	1	40	100
28		West							
29	Cavitt Stallman Rd / Bowman Pl	North	3,170	83	17	2	1	45	100
30		South	2,200	83	17	2	1	45	100
31		East	50	83	17	1	1	25	100
32		West	2,880	83	17	1	1	30	100
33	E Roseville Pkwy / Olympus Dr	North	22,290	83	17	2	1	45	100
34		South	19,910	83	17	2	1	45	100
35		East	4,930	83	17	1	1	40	100
36		West	1,310	83	17	1	1	30	100
37	E Roseville Pkwy / Douglas Blvd	North	22,060	83	17	2	1	45	100
38		South	12,840	83	17	2	1	45	100
39		East	35,030	83	17	2	1	45	100
40		West	26,930	83	17	2	1	45	100
41	Cavitt Stallman Rd / Douglas Blvd	North	3,290	83	17	2	1	25	100
42		South	3,300	83	17	2	1	25	100
43		East	31,340	83	17	2	1	45	100
44		West	31,010	83	17	2	1	45	100
45	Woodgrove Way / Douglas Blvd	North	1,030	83	17	1	1	25	100
46		South	980	83	17	1	1	25	100
47		East	30,720	83	17	2	1	45	100
48		West	31,670	83	17	2	1	45	100
49	Seeno Dr / Douglas Blvd	North	890	83	17	1	1	25	100
50		South							
51		East	30,490	83	17	2	1	45	100
52		West	30,640	83	17	2	1	45	100
53	Barton Rd / Douglas Blvd	North	4,010	83	17	2	1	40	100
54		South	5,030	83	17	2	1	45	100
55		East	27,720	83	17	2	1	45	100
56		West	28,080	83	17	2	1	45	100

Appendix B-3

FHWA Highway Traffic Noise Prediction Model Data Inputs  
Bayside Fields

File Name: 03 Existing - Sunday Midday Peak Hour

Model Run Date: 11/2/2021



Segment	Intersection	Direction	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance
1	Sierra College Blvd / Miners Ravine Dr	North	14,590	83	17	2	1	50	100
2		South	15,140	83	17	2	1	50	100
3		East	4,100	83	17	1	1	25	100
4		West	1,710	83	17	1	1	30	100
5	Sierra College Blvd / Olympus Dr	North	16,040	83	17	2	1	50	100
6		South	20,540	83	17	2	1	45	100
7		East	6,750	83	17	1	1	25	100
8		West	6,650	83	17	1	1	40	100
9	Sierra College Blvd / Cavitt Stallman Rd	North	20,740	83	17	2	1	45	100
10		South	19,850	83	17	2	1	45	100
11		East	3,230	83	17	1	1	25	100
12		West							
13	Sierra College Blvd / Douglas Blvd	North	18,670	83	17	2	1	45	100
14		South	19,250	83	17	2	1	45	100
15		East	28,750	83	17	2	1	45	100
16		West	29,310	83	17	2	1	45	100
17	Sierra College Blvd / Renaissance Creek	North	18,410	83	17	2	1	45	100
18		South	18,130	83	17	2	1	45	100
19		East	580	83	17	1	1	25	100
20		West	5,240	83	17	1	1	25	100
21	Sierra College Blvd / Eureka Rd	North	18,020	83	17	2	1	45	100
22		South	14,860	83	17	2	1	45	100
23		East	5,250	83	17	2	1	35	100
24		West	4,750	83	17	2	1	40	100
25	Cavitt Stallman Rd / Olive Ranch Rd	North	2,370	83	17	2	1	40	100
26		South	4,720	83	17	2	1	40	100
27		East	2,430	83	17	1	1	40	100
28		West							
29	Cavitt Stallman Rd / Bowman Pl	North	5,000	83	17	2	1	45	100
30		South	4,040	83	17	2	1	45	100
31		East	20	83	17	1	1	25	100
32		West	5,260	83	17	1	1	30	100
33	E Roseville Pkwy / Olympus Dr	North	20,740	83	17	2	1	45	100
34		South	17,630	83	17	2	1	45	100
35		East	6,430	83	17	1	1	40	100
36		West	2,200	83	17	1	1	30	100
37	E Roseville Pkwy / Douglas Blvd	North	17,780	83	17	2	1	45	100
38		South	9,450	83	17	2	1	45	100
39		East	31,120	83	17	2	1	45	100
40		West	24,030	83	17	2	1	45	100
41	Cavitt Stallman Rd / Douglas Blvd	North	3,210	83	17	2	1	25	100
42		South	2,230	83	17	2	1	25	100
43		East	27,700	83	17	2	1	45	100
44		West	28,160	83	17	2	1	45	100
45	Woodgrove Way / Douglas Blvd	North	770	83	17	1	1	25	100
46		South	740	83	17	1	1	25	100
47		East	26,970	83	17	2	1	45	100
48		West	27,700	83	17	2	1	45	100
49	Seeno Dr / Douglas Blvd	North	1,120	83	17	1	1	25	100
50		South							
51		East	26,530	83	17	2	1	45	100
52		West	26,970	83	17	2	1	45	100
53	Barton Rd / Douglas Blvd	North	6,780	83	17	2	1	40	100
54		South	6,470	83	17	2	1	45	100
55		East	34,460	83	17	2	1	45	100
56		West	33,850	83	17	2	1	45	100

Appendix B-4

FHWA Highway Traffic Noise Prediction Model Data Inputs  
Bayside Fields

File Name: 04 Existing+Project - Weekday PM Peak Hour

Model Run Date: 11/2/2021



Segment	Intersection	Direction	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance
1	Sierra College Blvd / Miners Ravine Dr	North	23,130	83	17	2	1	50	100
2		South	23,570	83	17	2	1	50	100
3		East	1,140	83	17	1	1	25	100
4		West	2,360	83	17	1	1	30	100
5	Sierra College Blvd / Olympus Dr	North	23,690	83	17	2	1	50	100
6		South	27,190	83	17	2	1	45	100
7		East	2,580	83	17	1	1	25	100
8		West	7,620	83	17	1	1	40	100
9	Sierra College Blvd / Cavitt Stallman Rd	North	27,760	83	17	2	1	45	100
10		South	24,830	83	17	2	1	45	100
11		East	5,290	83	17	1	1	25	100
12		West							
13	Sierra College Blvd / Douglas Blvd	North	24,280	83	17	2	1	45	100
14		South	26,960	83	17	2	1	45	100
15		East	39,480	83	17	2	1	45	100
16		West	40,160	83	17	2	1	45	100
17	Sierra College Blvd / Renaissance Creek	North	27,520	83	17	2	1	45	100
18		South	27,570	83	17	2	1	45	100
19		East	2,590	83	17	1	1	25	100
20		West	5,640	83	17	1	1	25	100
21	Sierra College Blvd / Eureka Rd	North	27,210	83	17	2	1	45	100
22		South	22,390	83	17	2	1	45	100
23		East	9,820	83	17	2	1	35	100
24		West	9,380	83	17	2	1	40	100
25	Cavitt Stallman Rd / Olive Ranch Rd	North	2,310	83	17	2	1	40	100
26		South	4,940	83	17	2	1	40	100
27		East	2,810	83	17	1	1	40	100
28		West							
29	Cavitt Stallman Rd / Bowman Pl	North	4,930	83	17	2	1	45	100
30		South	3,620	83	17	2	1	45	100
31		East	70	83	17	1	1	25	100
32		West	5,400	83	17	1	1	30	100
33	E Roseville Pkwy / Olympus Dr	North	32,650	83	17	2	1	45	100
34		South	29,970	83	17	2	1	45	100
35		East	8,970	83	17	1	1	40	100
36		West	3,910	83	17	1	1	30	100
37	E Roseville Pkwy / Douglas Blvd	North	24,860	83	17	2	1	45	100
38		South	12,940	83	17	2	1	45	100
39		East	43,990	83	17	2	1	45	100
40		West	34,130	83	17	2	1	45	100
41	Cavitt Stallman Rd / Douglas Blvd	North	4,880	83	17	2	1	25	100
42		South	3,890	83	17	2	1	25	100
43		East	37,860	83	17	2	1	45	100
44		West	37,870	83	17	2	1	45	100
45	Woodgrove Way / Douglas Blvd	North	880	83	17	1	1	25	100
46		South	1,210	83	17	1	1	25	100
47		East	37,130	83	17	2	1	45	100
48		West	37,840	83	17	2	1	45	100
49	Seeno Dr / Douglas Blvd	North	1,100	83	17	1	1	25	100
50		South							
51		East	36,850	83	17	2	1	45	100
52		West	37,070	83	17	2	1	45	100
53	Barton Rd / Douglas Blvd	North	5,780	83	17	2	1	40	100
54		South	6,930	83	17	2	1	45	100
55		East	35,790	83	17	2	1	45	100
56		West	35,080	83	17	2	1	45	100

# Appendix B-5

## FHWA Highway Traffic Noise Prediction Model Data Inputs

### Bayside Fields

File Name: 05 Existing+Project - Saturday Middy Peak Hour

Model Run Date: 11/2/2021



Segment	Intersection	Direction	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance
1	Sierra College Blvd / Miners Ravine Dr	North	14,830	83	17	2	1	50	100
2		South	15,960	83	17	2	1	50	100
3		East	1,130	83	17	1	1	25	100
4		West	1,600	83	17	1	1	30	100
5	Sierra College Blvd / Olympus Dr	North	15,930	83	17	2	1	50	100
6		South	18,740	83	17	2	1	45	100
7		East	1,300	83	17	1	1	25	100
8		West	4,350	83	17	1	1	40	100
9	Sierra College Blvd / Cavitt Stallman Rd	North	19,010	83	17	2	1	45	100
10		South	17,560	83	17	2	1	45	100
11		East	2,810	83	17	1	1	25	100
12		West							
13	Sierra College Blvd / Douglas Blvd	North	18,010	83	17	2	1	45	100
14		South	20,410	83	17	2	1	45	100
15		East	34,450	83	17	2	1	45	100
16		West	35,490	83	17	2	1	45	100
17	Sierra College Blvd / Renaissance Creek	North	19,700	83	17	2	1	45	100
18		South	18,740	83	17	2	1	45	100
19		East	960	83	17	1	1	25	100
20		West	5,680	83	17	1	1	25	100
21	Sierra College Blvd / Eureka Rd	North	18,870	83	17	2	1	45	100
22		South	15,110	83	17	2	1	45	100
23		East	7,700	83	17	2	1	35	100
24		West	6,400	83	17	2	1	40	100
25	Cavitt Stallman Rd / Olive Ranch Rd	North	1,390	83	17	2	1	40	100
26		South	3,020	83	17	2	1	40	100
27		East	1,710	83	17	1	1	40	100
28		West							
29	Cavitt Stallman Rd / Bowman Pl	North	3,250	83	17	2	1	45	100
30		South	2,290	83	17	2	1	45	100
31		East	50	83	17	1	1	25	100
32		West	3,050	83	17	1	1	30	100
33	E Roseville Pkwy / Olympus Dr	North	22,470	83	17	2	1	45	100
34		South	19,930	83	17	2	1	45	100
35		East	5,130	83	17	1	1	40	100
36		West	1,310	83	17	1	1	30	100
37	E Roseville Pkwy / Douglas Blvd	North	19,350	83	17	2	1	45	100
38		South	10,130	83	17	2	1	45	100
39		East	35,320	83	17	2	1	45	100
40		West	27,220	83	17	2	1	45	100
41	Cavitt Stallman Rd / Douglas Blvd	North	3,380	83	17	2	1	25	100
42		South	3,300	83	17	2	1	25	100
43		East	31,580	83	17	2	1	45	100
44		West	31,160	83	17	2	1	45	100
45	Woodgrove Way / Douglas Blvd	North	1,050	83	17	1	1	25	100
46		South	990	83	17	1	1	25	100
47		East	30,910	83	17	2	1	45	100
48		West	31,890	83	17	2	1	45	100
49	Seeno Dr / Douglas Blvd	North	910	83	17	1	1	25	100
50		South							
51		East	30,660	83	17	2	1	45	100
52		West	30,830	83	17	2	1	45	100
53	Barton Rd / Douglas Blvd	North	4,010	83	17	2	1	40	100
54		South	5,110	83	17	2	1	45	100
55		East	27,800	83	17	2	1	45	100
56		West	28,240	83	17	2	1	45	100

# Appendix B-6

## FHWA Highway Traffic Noise Prediction Model Data Inputs Bayside Fields

File Name: 06 Existing+Project - Sunday Midday Peak Hour

Model Run Date: 11/2/2021



Segment	Intersection	Direction	ADT	Day %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance
1	Sierra College Blvd / Miners Ravine Dr	North	14,680	83	17	2	1	50	100
2		South	15,640	83	17	2	1	50	100
3		East	4,710	83	17	1	1	25	100
4		West	1,730	83	17	1	1	30	100
5	Sierra College Blvd / Olympus Dr	North	16,530	83	17	2	1	50	100
6		South	21,030	83	17	2	1	45	100
7		East	6,890	83	17	1	1	25	100
8		West	6,790	83	17	1	1	40	100
9	Sierra College Blvd / Cavitt Stallman Rd	North	21,230	83	17	2	1	45	100
10		South	20,340	83	17	2	1	45	100
11		East	3,230	83	17	1	1	25	100
12		West							
13	Sierra College Blvd / Douglas Blvd	North	19,170	83	17	2	1	45	100
14		South	19,430	83	17	2	1	45	100
15		East	28,860	83	17	2	1	45	100
16		West	29,520	83	17	2	1	45	100
17	Sierra College Blvd / Renaissance Creek	North	18,590	83	17	2	1	45	100
18		South	18,310	83	17	2	1	45	100
19		East	580	83	17	1	1	25	100
20		West	5,240	83	17	1	1	25	100
21	Sierra College Blvd / Eureka Rd	North	18,200	83	17	2	1	45	100
22		South	14,950	83	17	2	1	45	100
23		East	5,300	83	17	2	1	35	100
24		West	4,790	83	17	2	1	40	100
25	Cavitt Stallman Rd / Olive Ranch Rd	North	2,410	83	17	2	1	40	100
26		South	4,780	83	17	2	1	40	100
27		East	2,450	83	17	1	1	40	100
28		West							
29	Cavitt Stallman Rd / Bowman Pl	North	5,060	83	17	2	1	45	100
30		South	4,100	83	17	2	1	45	100
31		East	20	83	17	1	1	25	100
32		West	5,380	83	17	1	1	30	100
33	E Roseville Pkwy / Olympus Dr	North	20,870	83	17	2	1	45	100
34		South	17,650	83	17	2	1	45	100
35		East	6,580	83	17	1	1	40	100
36		West	2,200	83	17	1	1	30	100
37	E Roseville Pkwy / Douglas Blvd	North	17,800	83	17	2	1	45	100
38		South	9,470	83	17	2	1	45	100
39		East	31,360	83	17	2	1	45	100
40		West	24,270	83	17	2	1	45	100
41	Cavitt Stallman Rd / Douglas Blvd	North	3,270	83	17	2	1	25	100
42		South	2,230	83	17	2	1	25	100
43		East	27,870	83	17	2	1	45	100
44		West	28,270	83	17	2	1	45	100
45	Woodgrove Way / Douglas Blvd	North	790	83	17	1	1	25	100
46		South	750	83	17	1	1	25	100
47		East	27,110	83	17	2	1	45	100
48		West	27,870	83	17	2	1	45	100
49	Seeno Dr / Douglas Blvd	North	1,140	83	17	1	1	25	100
50		South							
51		East	26,650	83	17	2	1	45	100
52		West	27,110	83	17	2	1	45	100
53	Barton Rd / Douglas Blvd	North	6,780	83	17	2	1	40	100
54		South	6,530	83	17	2	1	45	100
55		East	34,520	83	17	2	1	45	100
56		West	33,970	83	17	2	1	45	100



**A**



**B**



**C**

**Legend**

- A: LT-1: Along Sierra College Blvd, facing southeast towards roadway and project site
- B: LT-2: Along Cavitt Stallman Rd, facing southwest towards project site
- C: V-1: Adjacent to Sierra College Blvd, facing south towards project site

Bayside Fields  
Placer County, California

Noise & Vibration Survey Photographs

Appendix C



**Appendix D-1**  
**Long-Term Ambient Noise Monitoring Results - Site LT-1**  
**Bayside Fields - Placer County, California**  
**Wednesday, November 03, 2021**

Hour	Leq	Lmax	L50	L90
12:00 AM	58	78	40	36
1:00 AM	55	78	37	35
2:00 AM	54	76	35	33
3:00 AM	60	82	42	37
4:00 AM	61	83	45	36
5:00 AM	67	82	57	42
6:00 AM	70	83	65	53
7:00 AM	72	83	69	58
8:00 AM	72	84	69	58
9:00 AM	71	84	68	54
10:00 AM	71	87	67	54
11:00 AM	71	87	68	55
12:00 PM	71	89	68	55
1:00 PM	71	85	68	54
2:00 PM	71	85	68	57
3:00 PM	72	92	69	58
4:00 PM	72	88	70	58
5:00 PM	72	87	69	58
6:00 PM	71	87	68	56
7:00 PM	69	91	65	54
8:00 PM	68	83	63	53
9:00 PM	66	83	60	49
10:00 PM	64	81	56	45
11:00 PM	62	85	47	39

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	72	66	71	70	54	64
Lmax (Maximum)	92	83	86	85	76	81
L50 (Median)	70	60	67	65	35	47
L90 (Background)	58	49	55	53	33	39

Computed DNL, dB	72
% Daytime Energy	90%
% Nighttime Energy	10%

GPS Coordinates	38°45'12.42" N
	121°13'34.77" W

**Appendix D-2**  
**Long-Term Ambient Noise Monitoring Results - Site LT-1**  
**Bayside Fields - Placer County, California**  
**Thursday, November 04, 2021**

Hour	Leq	Lmax	L50	L90
12:00 AM	58	77	40	35
1:00 AM	59	83	41	36
2:00 AM	55	79	39	36
3:00 AM	59	80	38	33
4:00 AM	62	82	45	35
5:00 AM	70	83	63	47
6:00 AM	73	85	70	58
7:00 AM	75	84	73	63
8:00 AM	75	86	72	62
9:00 AM	73	88	70	60
10:00 AM	73	93	70	60
11:00 AM	72	90	70	59
12:00 PM	71	86	67	57
1:00 PM	71	83	67	56
2:00 PM	72	89	68	55
3:00 PM	72	84	68	55
4:00 PM	72	89	68	57
5:00 PM	72	92	68	57
6:00 PM	72	92	68	56
7:00 PM	69	89	65	54
8:00 PM	69	94	63	52
9:00 PM	67	85	62	51
10:00 PM	64	80	54	44
11:00 PM	63	81	51	41

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	75	67	72	73	55	66
Lmax (Maximum)	94	83	88	85	77	81
L50 (Median)	73	62	68	70	38	49
L90 (Background)	63	51	57	58	33	41

Computed DNL, dB	74
% Daytime Energy	87%
% Nighttime Energy	13%

GPS Coordinates	38°45'12.42" N
	121°13'34.77" W

**Appendix D-3**  
**Long-Term Ambient Noise Monitoring Results - Site LT-2**  
**Bayside Fields - Placer County, California**  
**11/2/2021 - 11/3/2021**

Hour	Leq	Lmax	L50	L90
12:00 PM	61	77	56	51
1:00 PM	61	77	55	50
2:00 PM	62	78	56	50
3:00 PM	62	77	58	53
4:00 PM	62	82	57	52
5:00 PM	62	77	58	52
6:00 PM	61	77	56	52
7:00 PM	59	74	54	50
8:00 PM	58	75	53	50
9:00 PM	57	76	51	47
10:00 PM	53	71	48	43
11:00 PM	51	72	44	39
12:00 AM	48	71	40	36
1:00 AM	48	72	38	35
2:00 AM	39	55	35	32
3:00 AM	49	74	40	35
4:00 AM	49	70	43	37
5:00 AM	55	79	50	41
6:00 AM	58	74	53	49
7:00 AM	61	78	58	53
8:00 AM	62	76	57	53
9:00 AM	59	76	53	48
10:00 AM	58	75	51	46
11:00 AM	60	83	53	48

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	62	53	61	58	39	52
Lmax (Maximum)	83	71	77	79	55	71
L50 (Median)	58	48	55	53	35	43
L90 (Background)	53	43	50	49	32	38

Computed DNL, dB	61
% Daytime Energy	93%
% Nighttime Energy	7%

GPS Coordinates	38°45'08.95" N
	121°13'26.84" W

**Appendix D-4**  
**Long-Term Ambient Noise Monitoring Results - Site LT-2**  
**Bayside Fields - Placer County, California**  
**11/3/2021 - 11/4/2021**

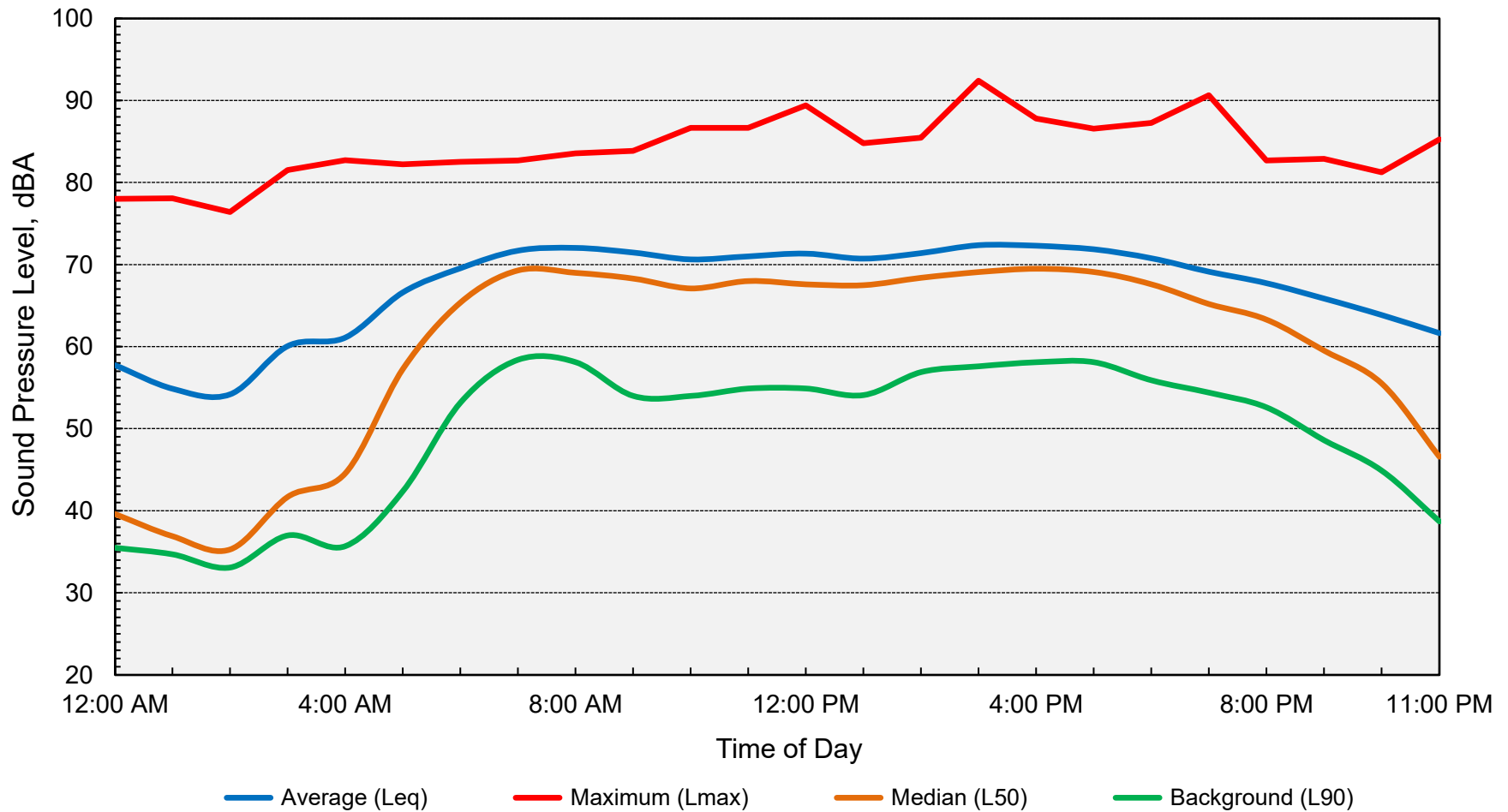
Hour	Leq	Lmax	L50	L90
12:00 PM	61	84	55	49
1:00 PM	61	78	57	50
2:00 PM	61	80	54	49
3:00 PM	61	77	55	51
4:00 PM	61	77	55	50
5:00 PM	61	74	56	50
6:00 PM	61	82	58	53
7:00 PM	59	78	55	52
8:00 PM	58	73	54	50
9:00 PM	57	76	52	46
10:00 PM	53	74	48	41
11:00 PM	50	72	42	35
12:00 AM	48	73	37	32
1:00 AM	48	70	37	32
2:00 AM	44	69	35	33
3:00 AM	45	70	36	32
4:00 AM	50	74	42	34
5:00 AM	56	75	49	44
6:00 AM	59	78	53	49
7:00 AM	62	89	57	53
8:00 AM	62	75	57	54
9:00 AM	61	77	56	52
10:00 AM	63	80	58	53
11:00 AM	63	82	54	49

	Statistical Summary					
	Daytime (7 a.m. - 10 p.m.)			Nighttime (10 p.m. - 7 a.m.)		
	High	Low	Average	High	Low	Average
Leq (Average)	63	53	61	59	44	52
Lmax (Maximum)	89	73	78	78	69	73
L50 (Median)	58	48	55	53	35	41
L90 (Background)	54	41	50	49	32	36

Computed DNL, dB	62
% Daytime Energy	92%
% Nighttime Energy	8%

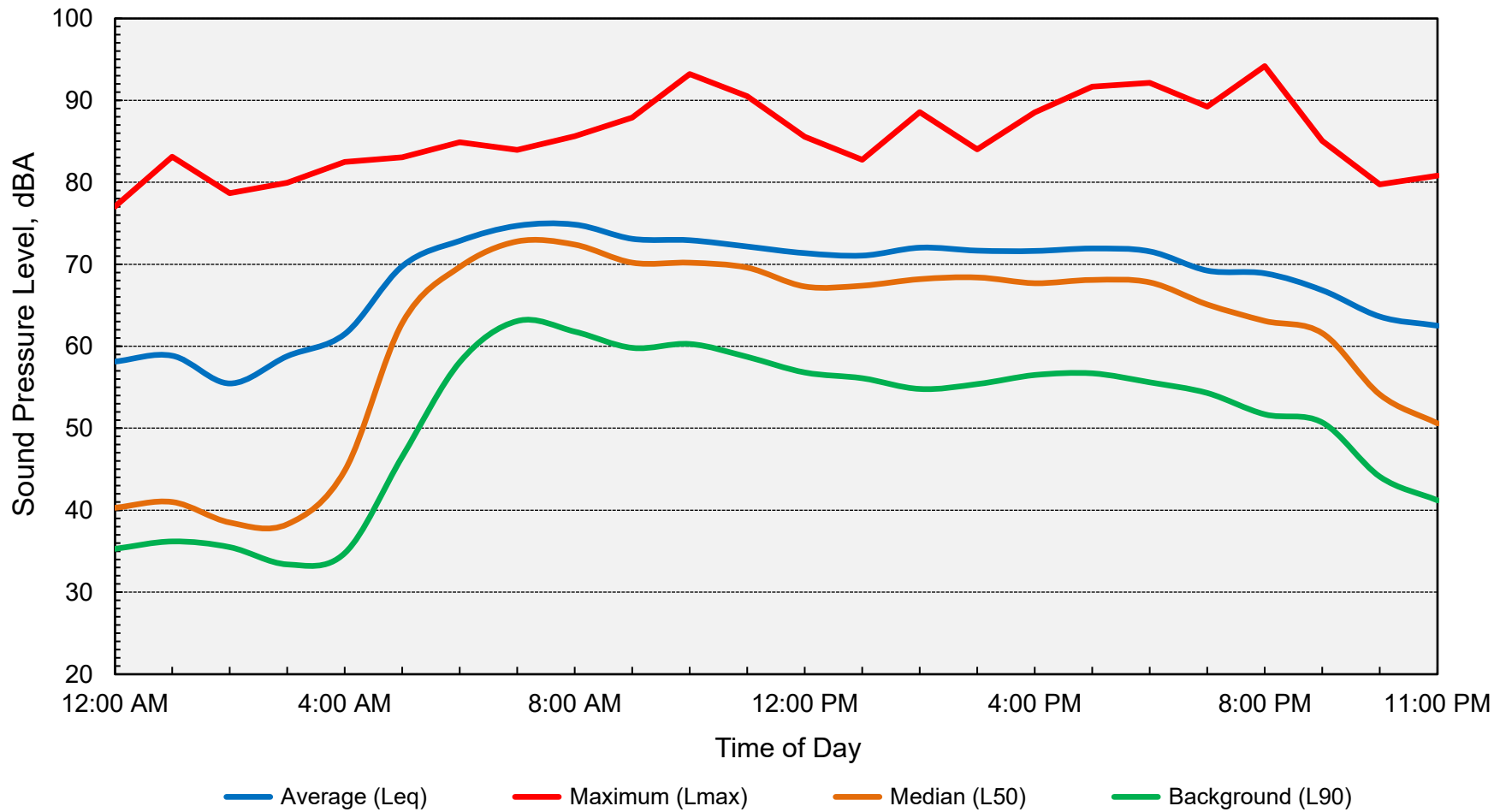
GPS Coordinates	38°45'08.95" N
	121°13'26.84" W

**Appendix E-1**  
**Long-Term Ambient Noise Monitoring Results - Site LT-1**  
**Bayside Fields - Placer County, California**  
**Wednesday, November 03, 2021**



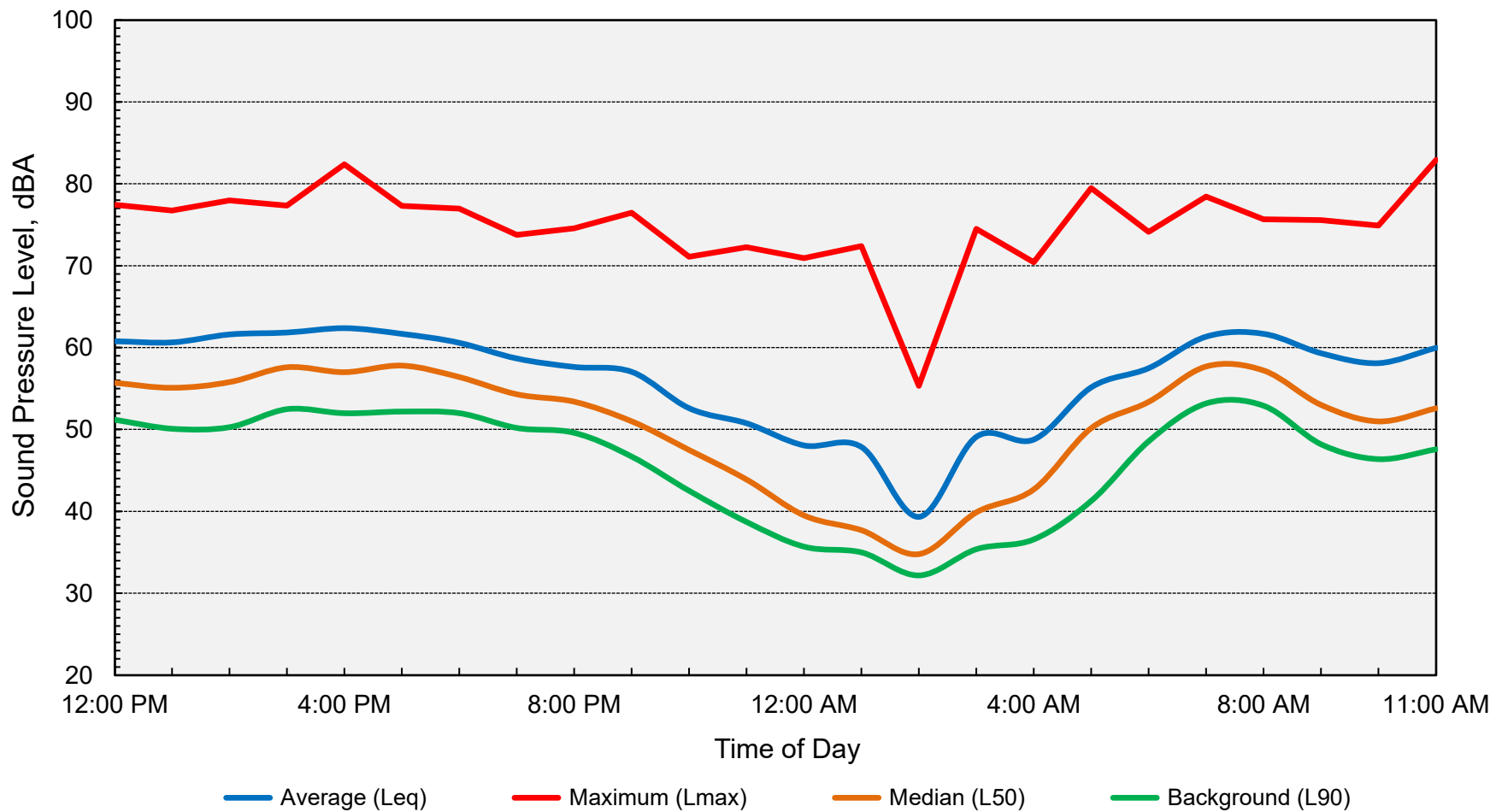
**Computed DNL = 72 dB**

**Appendix E-2**  
**Long-Term Ambient Noise Monitoring Results - Site LT-1**  
**Bayside Fields - Placer County, California**  
**Thursday, November 04, 2021**



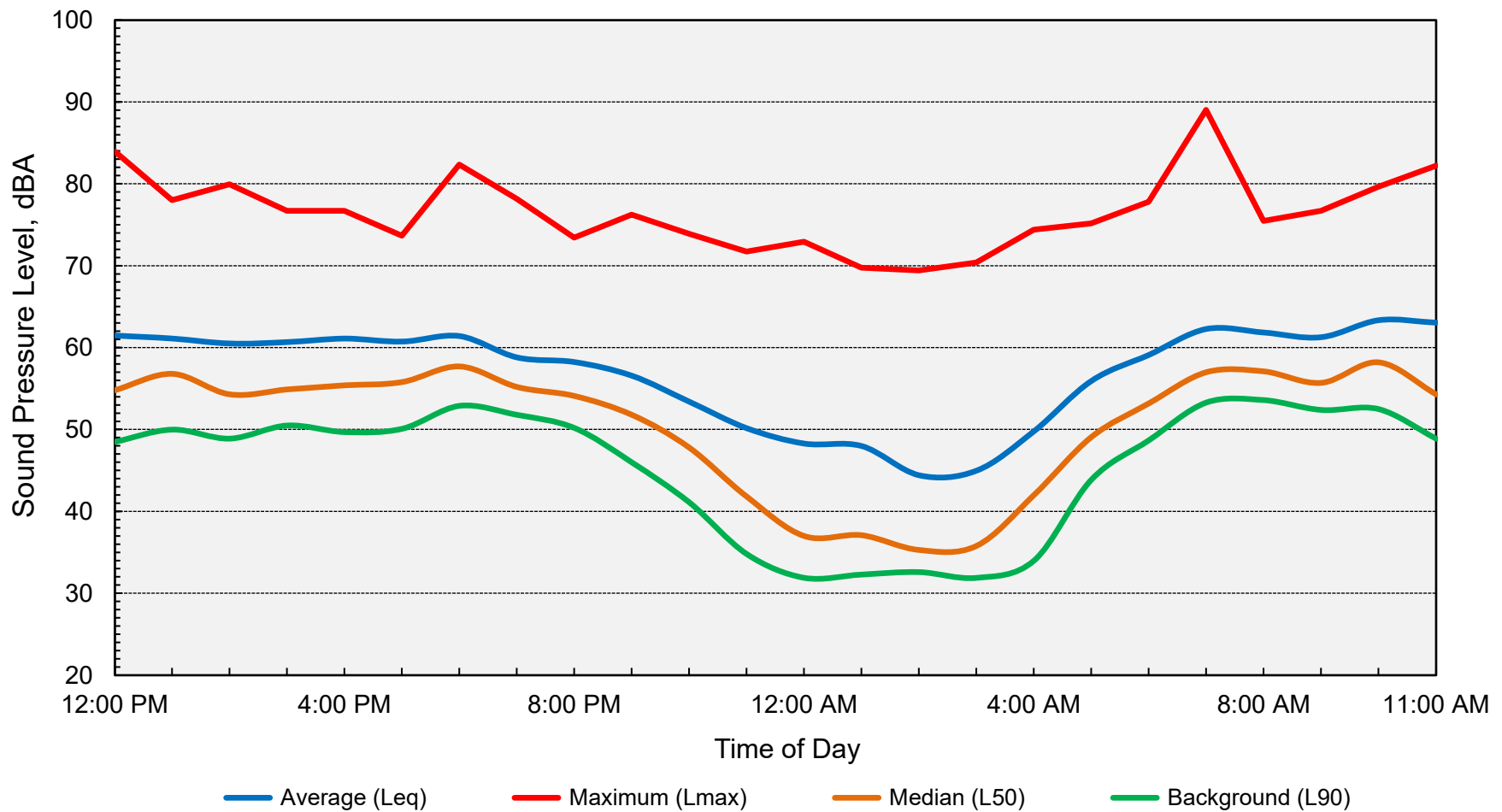
**Computed DNL = 74 dB**

**Appendix E-3**  
**Long-Term Ambient Noise Monitoring Results - Site LT-2**  
**Bayside Fields - Placer County, California**  
**11/2/2021 - 11/3/2021**



**Computed DNL = 61 dB**

**Appendix E-4**  
**Long-Term Ambient Noise Monitoring Results - Site LT-2**  
**Bayside Fields - Placer County, California**  
**11/3/2021 - 11/4/2021**



**Computed DNL = 62 dB**

## Appendix F-1

### FHWA Traffic Noise Prediction Model (FHWA-RD-77-108)

#### Noise Prediction Worksheet

##### Project Information:

Job Number: 2021-168  
Project Name: Bayside Fields  
Roadway Name: Sierra College Boulevard

##### Traffic Data:

Year: Future (Existing Plus Project)  
Daily Traffic Volume: 23,690  
Percent Daytime Traffic: 87  
Percent Nighttime Traffic: 13  
Percent Medium Trucks (2 axle): 2  
Percent Heavy Trucks (3+ axle): 1  
Assumed Vehicle Speed (mph): 50  
Intervening Ground Type (hard/soft): **Soft**

##### Traffic Noise Levels:

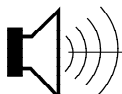
				----- DNL (dB) -----			
Location	Nearest Receivers	Distance	Offset (dB)	Medium		Heavy Trucks	Total
				Autos	Trucks		
1	Soccer field 2	180		62	53	54	63
2	Warm-up area	150		64	54	56	65
3	Children's play area	220		61	52	53	62
4	Picnic area	135		64	55	56	65

##### Traffic Noise Contours (No Calibration Offset):

DNL Contour, dB	Distance from Centerline, (ft)
75	30
70	66
65	142
60	305

##### Notes:

1. Future daily traffic volume (Existing Plus Project) for roadway was conservatively estimated by applying a factor of 10 to peak hour traffic volume data obtained from the project traffic impact analysis (Weekday PM peak hour inputs).



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Acoustical Consultants

**Appendix F-2**  
**FHWA Traffic Noise Prediction Model (FHWA-RD-77-108)**  
**Noise Prediction Worksheet**

**Project Information:**

Job Number: 2021-168  
Project Name: Bayside Fields  
Roadway Name: Cavitt Stallman Road

**Traffic Data:**

Year: Future (Existing Plus Project)  
Daily Traffic Volume: 2,410  
Percent Daytime Traffic: 90  
Percent Nighttime Traffic: 10  
Percent Medium Trucks (2 axle): 2  
Percent Heavy Trucks (3+ axle): 1  
Assumed Vehicle Speed (mph): 40  
Intervening Ground Type (hard/soft): **Soft**

**Traffic Noise Levels:**

Location	Nearest Receivers	Distance	Offset (dB)	----- DNL (dB) -----			Total
				Autos	Medium Trucks	Heavy Trucks	
1	Soccer field 2	280		46	38	40	48
2	Soccer field 3	300		46	38	40	47
3	Children's play area	350		45	37	39	46

**Traffic Noise Contours (No Calibration Offset):**

DNL Contour, dB	Distance from Centerline, (ft)
75	4
70	9
65	20
60	42

**Notes:** 1. Future daily traffic volume (Existing Plus Project) for roadway was conservatively estimated by applying a factor of 10 to peak hour traffic volume data obtained from the project traffic impact analysis (Sunday Midday peak hour inputs).